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AUG. 1987 • ISSUE 34

MICROTIMES™

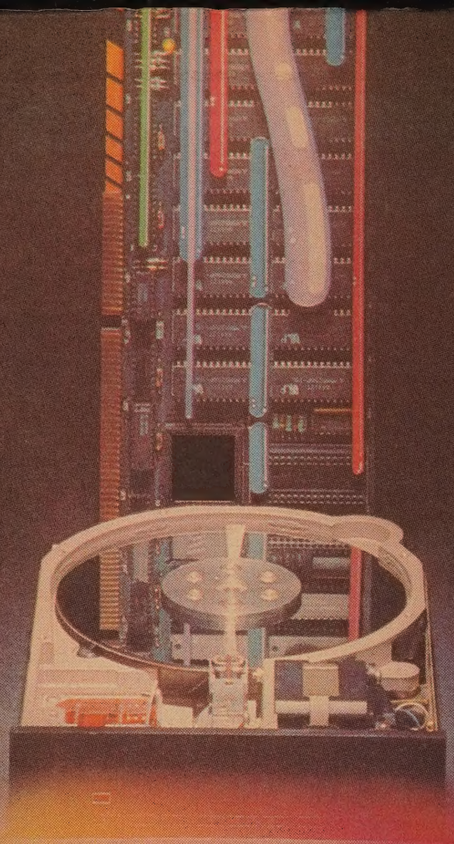
JAN LEWIS ON TRADE SANCTIONS:
Forget Pearl Harbor —Remember Detroit

VP- PLANNER
More Than A Lotus Clone

SPECIAL SECTION
MAC @ WORK

BUSINESS GRAPHICS SPECIAL

SUN WORKSTATIONS
The Act MAC II And PS/2 Have To Follow



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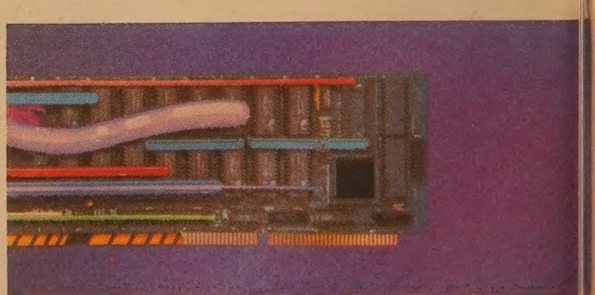

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MICROTIMES

43 Clone Makers Undaunted By PS/2

By Robert Beauchamp
While you might expect manufacturers of IBM clones and compatibles to be worried about Big Blue's new PS/2 series and its proprietary technology, that's not what's happening. In some cases, say various vendors, their business is actually improving in the wake of IBM's announcement, and they're only too happy to explain why.

58 Special Book Excerpt: How To Upgrade An Old IBM Personal Computer

By Aubrey Pilgrim
In this chapter from his long-awaited book *Build Your Own IBM Compatible And Save A Bundle*, clone-builder extraordinaire Pilgrim explains what you can do to bring your old PC up to current performance standards without going to the poorhouse.

HANDS ON

78 VP-Planner: More Than A 1-2-3 Clone

By Woody Liswood
Besides offering a hotly-litigated Lotus-like spreadsheet, this powerful and inexpensive package offers enough additional features and enhancements to make it the spreadsheet of choice in many businesses. Here's why it might be the package for you.

COVER STORY

46 Sun Workstations: The Act PS/2 And Mac II Have To Follow

By Mary Eisenhart and Bennett Falk
Unnoticed by many micro users, Sun Microsystems has been building powerful microprocessor-baased workstations for some time now, and has recently announced a price reduction on its low-end 3/50 machine — to $4995 — to make it directly competitive with PC-based technical workstations. Co-founder and UNIX wizard Bill Joy of Sun discusses the company, its history, and its remarkably successful strategies.

Cover and contents photos: Billy Douglas, Pat Johnson Studies

According to Bill Joy, Sun's business is building real computers based on microprocessor technology.

BUSINESS GRAPHICS SPECIAL

68 The Bewildered User's Guide To EGA

By Ed Kahn
Ed explains EGA in English — the standard, the monitors, the cards, and what they'll do for you.

72 Hands On: Perspective

By Birrell Walsh
With this revolutionary and simple-to-use package, your data can be transformed into instantly-understandable and versatile graphics.

Sony's CPD-1302 monitor offers high-quality EGA display for your PC.

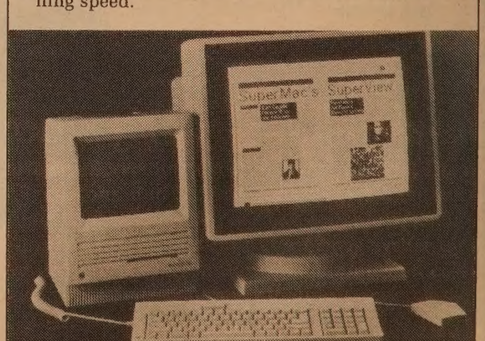
SPECIAL SECTION: MAC @ WORK

88 Beyond Mac-Fattening Third-Party Hardware Developers In A Changing World

By Robert Beauchamp
A return visit with the garage entrepreneurs who, two years ago, braved Apple's wrath to upgrade those closed-box Macintoshes.

96 Levco's Prodigy SE *By Jim Wolcott*

Got a Mac SE? Can't wait for the greater power of the 68020? Levco's board offers you 68020-based power now, to help you crunch those numbers, draw those graphics, and scroll your text at lightning speed.



The SuperView monitor lets SE users view facing page layouts full-sized on the screen.

100 Macintosh Products

New products to help your business get the most from its Macs.

COLUMNS

80 Exclusive To MicroTimes: The n.f. Factor: Online Terrorism Among The BIXen

By Brock N. Meeks
For 18 months, BIX, *Byte* magazine's online conferencing system, was beset with crude bigotry and death threats posted repeatedly and without warning all over the system. Now that the culprit's been apprehended, *MicroTimes* telecommunications columnist and BIX telecommunications conference moderator Brock Meets tells the inside story of a manhunt that involved a cast ranging from sysops to the FBI.

84 PC Systems

By Ken Milburn
An assortment of useful products for solving specific problems.

104 UNIX

By Bennett Falk
The Hapless User's Tale — or, how to get UNIX's hidden capabilities to work for you.

DEPARTMENTS

8 But Jan Lewis Says...

Jan's advice to the perpetrators of protectionism: Forget Pearl Harbor. Remember Detroit.

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16 Starting This Month In MicroTimes Wendy Woods' Newsbytes™

We're proud to welcome Wendy Woods to our pages, and to present the first installment of key stories in the industry from her renowned syndicated column. We think you'll like it.

106, 125 Buyers Guide

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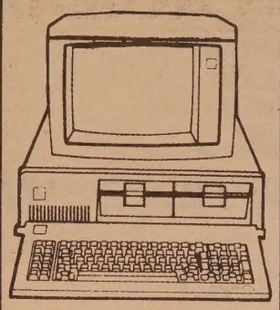

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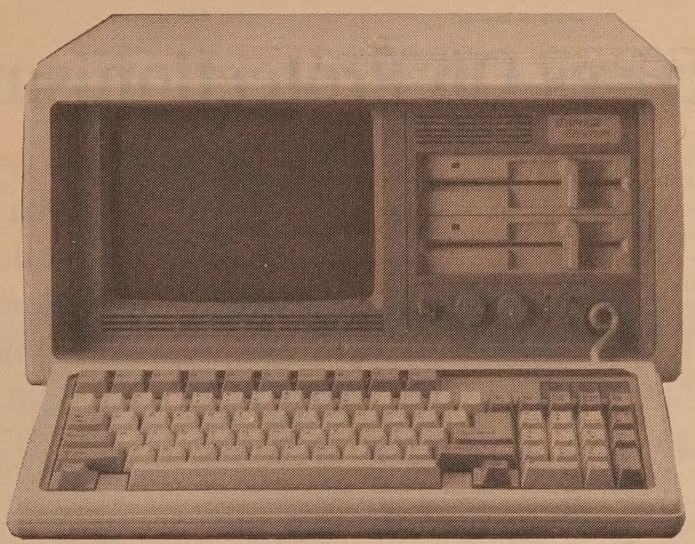

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BUT JAN LEWIS SAYS . . .

Perspectives On Protectionism

Blue Chip Electronics' John Rossi has a unique perspective on electronics trading in the orient, particularly in Korea, the home of Hyundai, his company's part owner. The founder, president, and chairman of the board of the PC-compatible manufacturing firm examined the tariffs against Japan, focusing on U.S. marketing myopia.

What do the trade sanctions that Reagan recently passed mean to you?

I can understand what Congress and Reagan are doing, trying to force the Japanese to be a little more open in their market. But I also know that American companies don't do a very good job of marketing their products in Japan, in the Japanese style, with the sort of commitment to quality and after-sale service, personal sales, and making the kind of very long-term investment that is needed to be successful there. But just as a matter of policy, I think that protections, such as tariffs or trade wars, are never very productive. They never work. And they hurt both sides.

Why do you say they never work?

Suppose I'm an American company making 256K DRAMs and all of a sudden there's a 300 percent duty on Japanese dynamic RAMs, so that the price before the duty is $5.00 and the price after, $9.00. As an American supplier, I'm going to price my product at $8.99, just underneath the Japanese. Instead of saying, "I've got that money, I'm going to grab their market share," I'm going to hold the price down to try to seize the market share.

The interest in American companies is always the quarterly report. All the short-term, quick emphasis is on profitability for that quarter. That then turns out to be inflationary. Instead of American companies being more competitive, they're going to be less competitive. And instead of American suppliers being able to have access to low-cost semiconductors, they're going to have to pay more money for semiconductors, which are used in just about everything that you touch these days. And that's going to be passed along in the form of higher prices to...guess who? You and me. The American people. It's just a tax. My view is, if the Japanese government really wants to subsidize the American economy by dumping things, I'm ready to take them.

I'm not going to complain. Because [the Japanese] are in the types of products that they want to dump, they're really not even strategic. And yet, one of the arguments is that the American semiconductor business can't be competitive in the face of a defense problem where you need to have all this semiconductor manufacturing might. Well, that doesn't really hold water either, because the types of things they're dumping are not leading-edge technology. The M-channel 256K DRAM and the 8088-2 microprocessors or logic — that isn't where the strategic aspects of this business lie. American companies would be better off concentrating on the leading-edge technologies that, by their very nature, yield higher and better returns on investment, and take more skill and manufacturing strength than the other end of the business. I'm perfectly happy to accept gifts from foreign people, and that's really what it boils down to. But you pay, you and I pay [for the tariffs].

Do you think in the long run that we lose jobs by enforcing tariffs?

No. If you look back, most of the statistics will tell you that the computer revolution has created many more jobs that it cost, but they are in different areas.

The steel mills don't produce as much steel as they used to domestically. Why? Because it's made less expensively in Second World or Third World developing countries. So, the rightful thing for us to do is to get out of those industries in which we're not particularly competitive and get into those economies where we are. So, we may have fewer people in the steel industry, mining, or in some of these other more traditional industries and more people in high-tech jobs, with the tremendous explosion of entrepreneurial activity, many small companies, and service-related industry.

There has been, since Reagan, a net increase in the number of jobs. Unemployment is down. We do have a problem with a trade imbalance, where we are exporting far less than we import. But again, I don't necessarily see that as bad. I get the impression that a lot of American companies are just whining about an inability to sell in Japan, when they don't understand the Japanese market, making a commitment to the country — to that product, to that business — and to making the investment.

So, the problem of the closed market in Japan is a two-way street. It may be closed, but we also aren't making the same efforts to penetrate that market.

True. Again, I think the Japanese could do a lot of things to help solve some of the problems. I'll give you an example, a simple one. We were doing some business with Brother before the yen went crazy, and I got a photograph of a prototype printer on a table with three lemons in front of it. I looked at it and thought of the association of lemons with something that doesn't work. So I asked [the Brother representative], "What is this with the lemons?" And he said, "Oh, this means high quality." I said, "Why is that?" He said, "Oh, lemons are tremendously expensive in Japan. The problem is, they only grow lemons in the southern part of Japan, and there isn't much production."

"It's supply and demand. So you would expect imports. Ah, there's the problem: low quota, high duty. That's in place to protect the lemon farmers in the southern part of Japan. And that's what I think is wrong with the Japanese economy: the agricultural people really do have quite a lot of political power.

If the Japanese could at least take a few steps along the road toward making their markets more open, I think that would help at least the political feeling in the U.S. On the other hand, though, there are industries and areas that are quite open, but American companies have not been successful because of the approach.

The Japanese invented high quality. They were the first group to start talking about failures in parts per million, rather than as a percentage, acceptable quality level as a percent. And the Japanese consumers are the same way.

Americans tend to concentrate on the functionality of a product: "Does this thing work?" If the logo's crooked, the manual's missing, or something is not quite right, we tend to overlook that, as long as the functionality is acceptable. In Japan that's not good enough.

Having after-sales service and being committed to the business is very important. Developing distributor relationships is important and has to be worked on. It's a long-term investment, and if you're not ready to stay in for the long haul, then you're better off not getting in at all. American companies need an immediate return. You go in and make an investment somewhere, and three months from now they want to know if you've broken even. And you probably haven't even covered your travel costs yet.

Do you see the latest tariff as being mainly symbolic?

Not just a little. The numbers I have suggest it's only on the elec-

John Rossi, Blue Chip Electronics:

"I can understand what Congress and Reagan are doing, trying to force the Japanese to be a little more open in their market. But I also know that American companies don't do a very good job of marketing their products in Japan, in the Japanese style..."

Jan Lewis is a well-known industry analyst and president of the Palo Alto Research Group, a consulting firm for the microcomputer industry. This article has been reprinted with permission from Computer Insider, *PARG's newsletter.*

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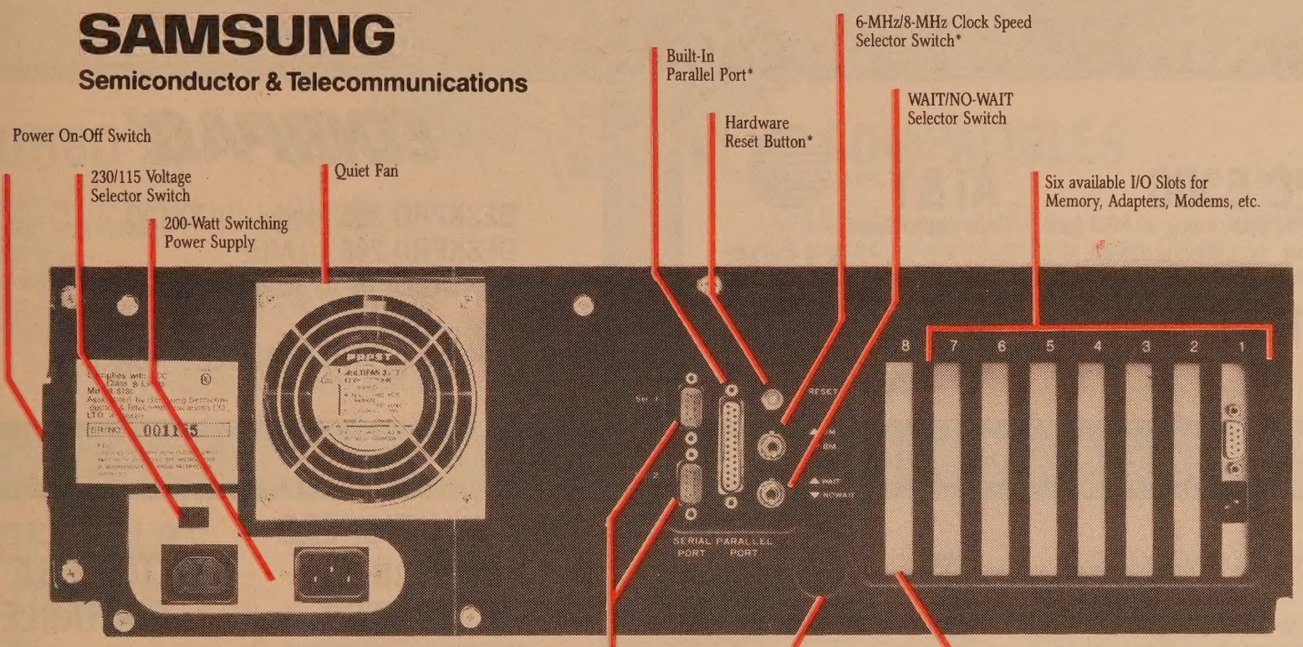

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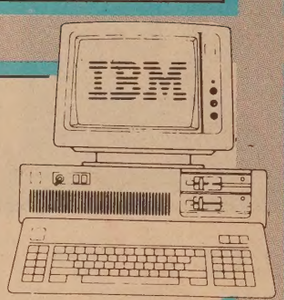

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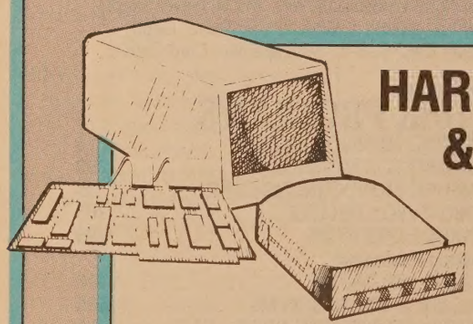

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tronics part, which I don't think is the lion's share of Japanese exports to this country anyway. They're trying to send some kind of message. Obviously, Reagan is against it. His whole political career has been as a fair trader.

That $300 million is a drop in the proverbial bucket.

But I think the other side is the political reality that Congress expected something to be done. And maybe they're trying to send a message to Japan, that they really are serious. But that $300 million is a drop in the proverbial bucket.

* * *

(Leland Strange is the president and chairman of Intelligent Systems Corporation, the Norcross, Georgia, parent company of Quadram, Princeton Graphic Systems, Datavue Computers, Peachtree Software, and Video 7.)

What do you feel the trade sanctions against the Japanese laptop manufacturers will accomplish?

They allow not free competition, but an unfair playing field for the Japanese. We're not ready to bite the bullet and insist that the Japanese become fair. The Japanese are expert at ways around tariffs, as opposed to any meaningful changes in their way of life. They simply are going to find a way to avoid [compliance].

I'm glad we [imposed the tariffs], but they accomplish pretty close to nothing. They're useless in trying to change any kind of long-term behavior on the part of the Japanese, of leveling playing fields. They know all the loopholes, and they know we'll stand on our principles for years before we act. We did it with semiconductors and we're doing it now with laptops. The Japanese are simply putting semiconductors into products.

It's very difficult to build support among end users. The Japanese will encourage consumers to react to anything that will cause prices to go up. They will spend money in justifying the product. They're subsidizing semiconductors.

We really let them do this with TVs. Today they certainly can manufacture a TV and sell it as cheap as anyone, on a fair and level playing field. Back when they were first in this market, TVs were much more expensive, but the Japanese subsidized them and in turn drove the U.S. producers out. And now all you have left are Japanese [TV manufacturers]. So they'll take the short-term loss and not worry about it for the long-term market share. And we've certainly seen that in the microcomputer area.

What do you mean by, "We're not ready to bite the bullet?"

We're patsies. We have a principle. That principle is free trade. And it's very analogous to the Quakers or those pacifists who believe in peace, therefore, you shouldn't have any weapons. Well, we're the same way about trade.

It doesn't matter how many arrows we're getting shot in our back. We'll go down bleeding as long as we can say that we're believers in free trade, we practice what we preach. And the Japanese are laughing at us all the way. I can almost see the Japanese shooting their arrows, with their shields in front of them, and saying, "Free trade, free trade."

You've said that you believe the tariffs were directed against NEC and Toshiba.

It's clear that NEC and Toshiba were the prime culprits under the antigovernment provisions of the latest agreement, so the tariffs were designed to attack NEC and Toshiba without naming them.

They're packaging all the parts of the finished products together and shipping them over here as parts, claiming a certain price (and that price is fair market value — no problem with that), putting them together in the U.S., and then selling them at a price that is fair market value that the semiconductors, with the cost of the promotions and trade advertising, could never justify. So it's another way of dumping.

But we'll never get to them because they're selling the components certainly below the price of what they're selling the product for. They'll absolutely be unprofitable in the U.S., but they make money in the long term by continuing to dominate the market, and they keep their factories running in Japan.

I can almost see the Japanese shooting their arrows and saying, "Free trade, Free trade."

Explain your proposed antitrust suit against NEC.

We have under a consideration a suit against NEC for antitrust action, really the result of the amount of money they're spending promoting a product that ought to be considered a part of the cost of the product.

And interestingly enough, 10 days after someone covered that story [about the proposed suit], NEC raised the price of their laptop computer by $200. They said it had nothing to do with the tariffs. It was strictly due to the change in yen, which in fact is true. What it means is they should have raised their price a long time ago. And not only that, but they saw someone saying they might take some action. Even though I realized how fruitless [the court action] probably was, I wanted to express frustration at something that I knew was wrong. □

Forget Pearl Harbor. Remember Detroit.

Right now, the hottest topic is the new tariffs on Japanese goods. The comment one hears most often is, "I'm in favor of free trade, but...." But the Japanese must be taught a lesson; but the Japanese are violating the trade agreement; but the Japanese are dumping, undercutting, selling below cost; but the Japanese are keeping us out of their markets.

This last complaint is voiced so often that it sometimes seems that America's real beef with the Japanese is not an objection to their dumping, but a whine at being kept out of Japanese markets. Yet practically all observers have the same thing to say: Most Americans do not know how to do business in Japan, and they will not take the trouble to learn.

In honest company, these practices would be called price-fixing, not fair trade.

Certainly it can be done. When BMW decided it wanted into the Japanese auto markets, it proceeded to acquire Japanese auto distributorships and Japanese personnel to run them. Within two years, BMW had become the most popular imported auto in Japan. Its market share now amounts to about 5 percent of the Japanese auto market — a success achieved by combining high-quality products with a commitment to doing business Japanese-style.

Furthermore, it is unclear if the accusations about Japanese trade barriers are entirely accurate. According to a recent article in *Newsweek* (April 13, 1987, "The Myths of a Trade War"), the Japanese spent just slightly less of their income on American goods than Americans did on Japanese goods — 1.7 percent versus 1.8 percent, respectively. In addition, the U.S.-Japan trade imbalance can be misleading. Consider that sales of U.S. subsidiaries operating in Japan are four times larger than the U.S. trade deficit with Japan. Yet they are considered Japanese companies.

As for dumping, I wonder if "dumping" is not just a dirty word for a time-honored practice: the loss leader or promotion. Some observers note that the Japanese undersell competitors until they have driven all competition out of the market, and then jack up prices again. But is that really what has happened? Once the Japanese "owned" the TV market, prices did not soar. They continued their downward trend. And now, manufacturers from Korea, Taiwan, Singapore, and Hong Kong are jumping into this market — just as they jumped into watches, calculators, and microwave ovens — and as they doubtless will jump into semiconductors, laptop computers, printers, and disk drives. And the beneficiary of all this competition is the consumer.

Tariffs and quotas operate against the consumer by raising prices. In honest company, these practices would be called price-fixing, not fair trade. When less expensive foreign goods are made more expensive by tariffs, domestic manufacturers have no incentive to compete. Why should they, when they are being subsidized by the consumer?

Here, the story can take some interesting twists. The tariff may ultimately be self-defeating. The consumer may decide to do without, causing a recession in domestic industry. Or U.S. manufacturers may shift more of their production overseas. After all, American electronics manufacturers have not hesitated to take manufacturing operations offshore to Mexico, Taiwain, India, etc., in order to cut costs. If cheaply produced foreign goods are costing Americans their jobs, can we place the blame entirely on foreigners?

I wonder if "dumping" is not just a dirty word for a time-honored practice: the loss leader or promotion.

Recent history of American industry is one of complacency and slothfulness. The U.S. auto industry failed to modernize its assembly lines, let quality slip, and refused to recognize changes in consumer tastes. The results were disastrous. The American steel industry avoided plant modernization for decades by hiding behind import tariffs. Now it is a "sunset" industry.

It was feared that automation would create widespread unemployment in the steel towns of the Midwest. Ironically, the high cost of American steel, along with the declining U.S. auto markets, has produced the same results — the "rust belt." Whether the U.S. wishes to acknowledge it or not, the Japanese may have a lot less to do with our trade problems than we do. □

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– John Ruskin

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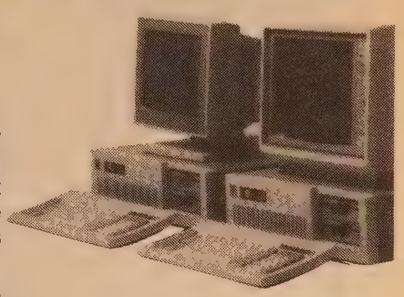

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July 11 San Bernardino Show and Sale. National Orange Show Grounds. Call Golden Gate Shows, (415) 388-8893 for information.

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July 21 – 24 Hands-On Expert Systems Design & Development. Anaheim. Call ICS (800) 421-8166 for details and registration information.

July 27 – 32 SIGGRAPH '87 Annual Conference On Computer Graphics. Anaheim Convention Center, Anaheim, CA. Contact the SIGGRAPH '87 Conference Management Office at 111 East Wacker Drive, #600, Chicago, IL 60601, (312) 644-6610.

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News about user group meetings and other regularly scheduled activities should be sent to User Group network at the same address.

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Newsbytes From COMDEX

By Dana Blankenhorn

Tariffs—Everybody's Avoiding Them

President Reagan announced 100% punitive tariffs against Japanese micros in March, but you'd never know it. Some companies, like Toshiba, have taken prices up $1-200, but instead of talking about that, they're talking about a new 1100 portable with an 80C88 chip they've got for $1,200. The 80C88 has an 8-bit system bus, and the tariff covers only the more sophisticated machines with a 16-bit bus. NEC and Mitsubishi have found another way around the tariff—by assembling their computers here in the U.S., they avoid the whole problem. All of which had tariff supporters like Bruce Walter of Grid Systems Inc., (Dallas, TX) scratching their heads.

IBM And PS/2

IBM has replaced Charlie Chaplin with a routine stage show called "The Turning Point," featuring a man and a woman discussing the new PS/2 line —she's the one with the answers. All four machines are on display, (although not all of them are shipping yet) and all IBM salesmen wear headsets which they plug into a hidden speaker system for demonstrations. Featured are IBM's software-hardware "Solution Pacs," such as one for desktop publishing, due for release in August. OS/2 still won't ship until the end of the year, we were told, but an early, demonstration version was on display. So was the new DOS 3.30. The booth was cut off by walls into sections for individual PS/2 models, software, and to answer questions from dealers. (This last was usually empty.)

The new PS/2s represent more than lower-cost manufacturing. They also put "Big Blue" into niches previously mined only by Apple, Atari and Commodore. Like music. A Model 30 with an IBM add-in card was attached to a Yamaha DX-7 synthesizer, and an IBM employee named Jeff Dibley played "Chattanooga Choo-Choo" and other tunes, with the Model 30 screen giving a complete read-out on all elements of the performance.

Amiga Makes A Big Splash

Once again Commodore featured product developers in its booth, but now the names are more established. WordPerfect, for instance, was showing versions of its best-selling word processing programs under both Amiga DOS and PC-DOS. (The Amiga runs an older version, 4.1 of the program, but it supports multi-tasking under Amiga DOS.) *WordPerfect Executive* ran fine under PC-DOS with 5¼ inch disks.

Digi-View, from NewTek in Topeka, Kansas, was described to me as "the best thing in the show," and maybe it is. It's an image capturing system for the Amiga, which works with any TV camera. To show off the product, Newtek pointed a TV camera at one of their employees and had her say a few words. Then they loaded the tape onto an Amiga and began to play with it—sort of a "Maxine Headroom". It certainly drew a crowd.

Want to make an interactive video program on your very own desktop? You can, thanks to Spafax Inc., a British developer exhibiting in the Commodore Amiga booth. Executive Vice President Robert P. Clarke said the National Geographic Society has already begun using a Spafax system to put all their photos on disk and index them. Spafax stores up to 55,000 still frames, or 30 minutes of full-motion TV, on a single 12-inch Laserdisk, and the whole system costs only about $6,000, using the Amiga 2000 as the computing platform and a Sony Laserdisk player. Both teaching and archival storage of TV-based information are now possible on the Spafax system. CONTACT: Robert P. Clarke, Spafax, (404) 984-2810.

Even without proper support, developers keep coming up with neat stuff for the Amiga.

For instance, how about four-color separations, output to a Linotronic typesetter, right off a desktop? Gold Disk, a small outfit out of Missassauga, Ontario, has it in The Professional Page, a $395 product due to ship at the end of July. The only practical limit on output size is the output device—the software can run documents up to 17″×17″. Of course, it supports PostScript. For those with lower budgets, the same company publishes *PageSetter*, which can output to a dot matrix printer ($150) and *LaserScript* ($45), which offers PostScript support for *PageSetter* users.

Right next to Gold Disk was Richard W. Brown of Brown-Wagh Publishing, Los Gatos, CA, showing *Publisher 1000*, another Amiga desktop publishing program which will support both the H-P LaserJet and PostScript Standards at $200. Brown promised to send new drivers for both printers to anyone who buys his product off-the-shelf and sends in the warranty card. Free, he said. CONTACT: GOLD DISK, P.O. Box 789, Streetsville, Mississauga, Ontario, CANADA, L5M 2C2 (416) 828-0913; Richard W. Brown, BROWN-WAGH PUBLISHING, 16795 Lark Ave., Suite 210, Los Gatos, CA 95030 (408) 395-3838

The Merging Of Laptop And Desktop

That's the idea behind *WordPerfect Executive*, an integrated package on a 3½″ disk which works equally well on PC-compatible laptops or desktops. It has word processing, a spreadsheet, *Sidekick*-like utilities and a user-friendly shell, all on one 720K disk. (You can also get it on the old 5¼″ format, but it takes two disks.) "All the resident modules can be resident on a 640K machine," noted WordPerfect press spokesman Jeff Acerson. Thus the new standard: 640K, 3½″ disks, one machine for both the plane and the office. (Nice.) Price: $249.

For WordPerfect followers, the company also renamed its other products (*MathPlan* becomes *PlanPerfect*) and beefed up its phone-in support. "Our goal is you won't be on hold for more than two minutes, and we're going to have toll-free 800-line support for all our products," said executive vice president Pete Peterson. If you're one of their customers, check it out by calling 1-800-321-5906. CONTACT: Jeff Acerson, WordPerfect Corp., (801)227-4010.

The Koreans Are Here In Force...

Japanese firms are dominating this show, but they're not taking much pleasure in it. Instead, they're looking over their shoulders at the Koreans. They're here in force. Samsung, Hyundai, and Goldstar all have large booths offering a full line of IBM-compatibles and components. So does Hyosung. And Daewoo is here demonstrating its hold over Cordata, with machines sporting AT&T 6300 compatibility at a very, very low price.

For those keeping score, Samsung and Hyundai seem the most ambitious. Hyundai, which entered the market through Blue Chip Electronics of Chandler, AZ, now calls Blue Chip merely "a dealer." They're looking for new dealers, distributors and OEMs for a complete line of Hyundai-branded machines, components, and PC board manufacturing services. Samsung's J.S. Ko says he's signed a distributor agreement with Delta Distributing for his line of PC-compatibles, but he too is pushing a full line of components on an OEM basis. "We make our own semiconductors. We've accumulated technology to make the computer. And we have very high quality," Ko says.

...And So Are The Taiwanese

Most of their booths are tiny, and their names unfamiliar, but the Taiwanese were coming on fast at this COMDEX, too. They've got the products, and their prices are *crazy*.

How crazy? I asked Eric Cheng of Stage System Engineering for a retail price on his Taiwanese 80386-based "luggable" (26-pound) PC, with a 44 megabyte hard drive, and 1 megabyte of RAM. "$4,500," he said. How about a 2400 baud, Hayes-compatible modem from Link Technologies, also of Taiwan, for $269? Or an AT-compatible from Golden Star Technology with a 40 megabyte hard drive and EGA monitor for $2,000?

There are two ways you can look at this. Oh goody, we're getting bargains. Or you can look at it the Japanese way. Jeff Chou of R.P.T. Intergroup, another AT-compatible maker, was asked about his plans for the Japanese market, dominated by NEC. "We're trying to make an NEC-compatible computer for the Japanese market, but it's stuck in

U.S. stories in Newsbytes are compiled by Wendy Woods, Ken Maize, and Dana Blankenhorn. Masayuki Miyazawa and Keizo Yamamoto compile the Japanese reports in Tokyo. Send all comments and newstips to Wendy Woods, Editor in Cheif, NEWSBYTES, 39 Miramar, San Francisco, California 94112 or call 415-587-6389.

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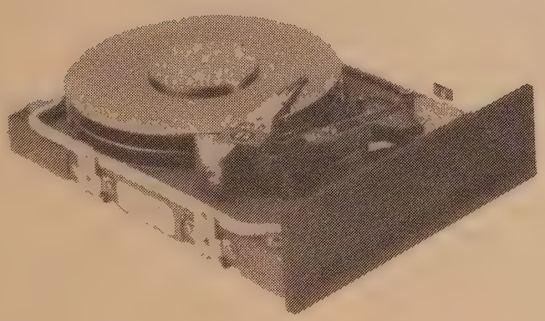

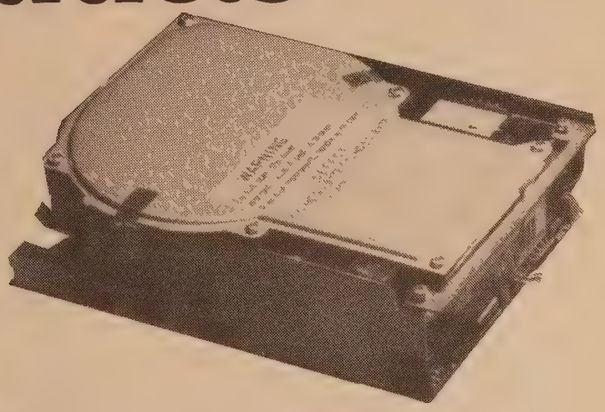

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the R&D stages. It's difficult to get technical specifications from them." Food for thought.

A Publisher's Lament: What Happens When Japan Inc. Takes Over

We ran into Terry Kepner, publisher of *Pico*—a magazine for owners of laptop computers. Terry is adding value to a market dominated by Japanese firms like Kyocera, Toshiba, and NEC. His problems show the flip side of the growing Japanese dominance of U.S. computing.

Basically, he says, all the Japanese giants act like IBM. They don't recognize him, don't support him, and don't do advertising geared to specific products. "They don't even advertise nationwide," he complains. "They do all their advertising through dealers," and dealers don't buy national magazine ads. As a result, "people don't know that some products exist. Sharp has many machines in dealer showrooms which customers are surprised to see." Needless to say, they don't buy 'em either. The risk in this is that laptop owners may be left without the ongoing support and contact a magazine like *Pico* (or *PC Week* for that matter) provides. CONTACT: Terry Kepner, *Pico*, (603) 924-7859

Zenith's Mac-Like "eaZy PC"

Reporters I talked to positively raved about the Zenith "eaZy pc," a $995 list MS-DOS box with no slots, 3½ inch floppies, and a black-on-white screen with a new Mac-like operating interface from Microsoft called MS-DOS Manager. The machine is super-quiet, because there's no fan and the power supply is in the monitor. "This is the first MS-DOS PC with the ease of operation attributed to Apple's Macintosh," Zenith president Robert Dilworth said. Not in the press release, but admitted freely in the booth, this American Rocky is Made at a Zenith factory in . . . (ahem) Taiwan.

That's far from all. Zenith said it is now shipping a new Intel 80386-based PC which is compatible with IBM's new VGA standard, as well as its old EGA and CGA standards. Dilworth said this machine can process three million instructions per second and has up to 10 AT-style slots. Prices for the Model 40 and Model 80 are from $6,500-7,500, and they both come with Microsoft *Windows* standard. Finally, Zenith showed off its new Flat Color Monitor, a 14-inch screen Dilworth claimed "outperforms professional graphics displays that cost $5-10,000." The price: $1,000. CONTACT: Glen Nelson, Zenith Data Systems, (312) 699-4839.

Wendy Woods Brings Newsbytes To MicroTimes

Wendy Woods, a syndicated editor and on-line columnist published nationally and internationally, calls the computer industry "the most fun I've ever had in journalism." Beginning this issue, *MicroTimes* is pleased to announce the regular publication of her nationally renowned computer information service, Newsbytes™. If it's possible to have fun being serious, Woods achieves this in Newsbytes.

Woods began her computer career in 1982 in the midst of a television journalism career, covering assignments in Silicon Valley for the Cable News Network and San Francisco's KGO. "I felt like a fish out of water," says Woods, "I didn't even know what a hard drive was." So Woods bought herself an Apple IIe and began to teach herself on the computer. And, like so many of us, she got hooked. In 1983 she discovered online services and became a member of The Source and CompuServe. When her bills began exceeding $400 a month, she decided she'd better make this computer hobby pay for itself. It was then that the idea of Newsbytes came to her.

At this time The Source offered what it called "Member publishing," which allowed subscribers to send in their articles and receive royalties based on readership. While searching online for computer news, Woods conceived the idea of creating a news column with the top 15 or 20 stories of the week. Using the wire services, newspapers, and her own journalism contacts, Woods designed Newsbytes as an assignment sheet for other reporters — a "poop sheet" as it is known in the industry. "I was basically moonlighting," Woods remarks. "I didn't have a real job in the computer industry . . . I was doing this to pay my Source bills!"

Nevertheless it worked, and worked well. In 1984, ready for a career change and wanting to leave television journalism, Woods decided to make Newsbytes a business. Soon she began editing stories sent in by other reporters and became syndicated outside of California. In 1985 The Source made Newsbytes an actual service for readers, the first—and thus far only—member publication to be turned into a regular feature by them. As a Source service, Newsbytes stands next to the Universal Press Information, the Associated Press and the Washington *Post*.

Newsbytes as a whole consists of fourteen features on a weekly basis, with eight regular contributors and five to six intermittent contributors. All the writers have an individual style, but they are patterned after Woods' own approach, "a more conversational style . . . it began as more of a TV style." Woods attributes Newsbytes' longevity to its low overhead (all communications take place electronically) and to the dedication of its staff. "It is important for us to compile a succinct, accurate portrait of what's happening in the computer industry in our area," says Woods. And this means fast, easy news to its many readers.

Today Newsbytes is syndicated in Canada, Japan, and the United Kingdom as well as throughout the U.S. In addition to Newsbytes West, which Woods writes herself, there is now also Newsbytes East and Newsbytes South. These are written by individual readers who wanted local versions, then sent electronically to Woods who edits them and gets them in print. Woods estimates that the writers churn out over 29,000 words a week, which surpasses any weekly tabloids, magazines or newspapers. Newsbytes is read by hundreds of thousands of readers each week, through online bulletin boards, regional systems and publications such as *MicroTimes*. In Japan, Newsbytes West is published by *I/O* magazine which alone has a circulation of over 200,000.

Other publications which print Newsbytes include *St. Louis Computing*, *The Inputter*, and *Bits And Bytes* in New Zealand. Its online services include a European based service, Telestarr in Japan and around ten publicly accessed bulletin board systems in the United States. Newsbytes' readers come from such diverse places as Costa Rica, Japan, and Germany.

In 1985 Newsbytes won the "Best Online Publication Award" at the Computer Press Association. Because Woods became president of the CPA last year, she chose not to enter Newsbytes a second time. Woods is also a correspondent for the *Computer Chronicles* on PBS, aired locally on KCSN.

As to the new publication in *MicroTimes*, Woods emphasizes that "*MicroTimes* will be our most important publication to date because it will publish in print most of the columns." In the future, Woods would like to see Newsbytes expand into even more printed publications.

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The FCC Strikes Again: One Computer Seized, 60 Cited

The Federal Communications Commission swooped down on the COMDEX show floor Monday and bragged about it Wednesday. (They also swooped at the Fall COMDEX in Las Vegas. COMDEX is very convenient for enforcing laws against computers.) Spokesman Jerry Freeman, saying "our concern is to protect the (radio) spectrum" and "emissions cause interference to radio and television, possibly to aviation and safety services," talked to about 20 reporters huddled around the tiny FCC booth near the east entrance to the Congress Center.

"FCC investigators have visited over 100 booths and found about 60% of the devices surveyed were not in compliance," he said. (A list of the suspects will be provided to anyone who asks for it once investigations are done in a few weeks.) "Companies with non-complying devices are subject to

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- Context sensitive on-line help
- Dynamic display of tape status
- Multiple windows (nestable and movable)
- Extensive diagnostics

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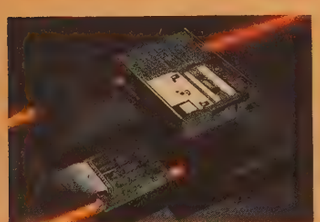

$775 Excel Stream 20 Internal

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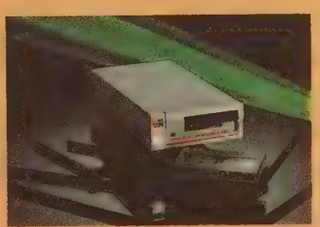

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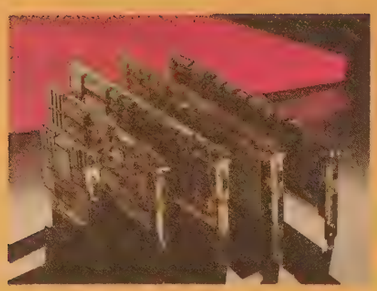


GRAPHICS

EPGA - Professional Graphics Adapter

- Compatible with the IBM* PGC
- Fits into a single slot
- Displays 640x480 graphics in 256 colors
- Emulates CGA, Hercules* and MGA modes

Micro Enhancer

- Compatible with the IBM EGA
- Supports 640x350 graphics in 16/64 colors
- Half card fits in a short slot
- Emulates Hercules and CGA modes

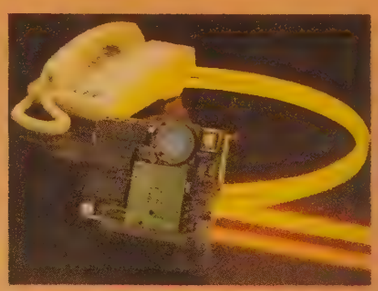
Everex Edge

- Displays 320x200 graphics in 16 colors
- Runs HGA 720x348 monochrome graphics
- Runs Lotus 1-2-3* and Symphony* in 132 columns
- Parallel port and light pen connectors

STREAMING TAPE

Excel Stream 20
Excel Stream-60
Excel Stream 60-8

- 60MB cartridge Backup
- 20MB cassette Backup
- Automatic Scheduler
- File Restore from Image backup
- Backup across networks
- 5MB/min speed
- Multiple datasets and tapes
- Image and File records on the same tape
- Context sensitive help
- Nestable and movable windows
- Extensive diagnostics
- Easy installation program



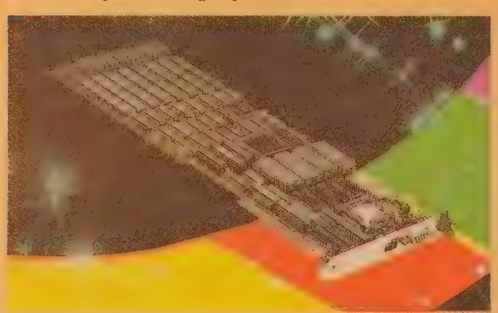
COMMUNICATIONS

Evercom 24 Modem

- International operations at 2400 bps
- Compatible with Hayes* AT command
- Bell 212A/103 and CCITT V.22/V.22bis compatible
- Adaptive equalization
- Automatic answer and voice/data switching
- Phone off-hook detect
- Runs in slot 8 of IBM XT*
- Runs with multi-line phones

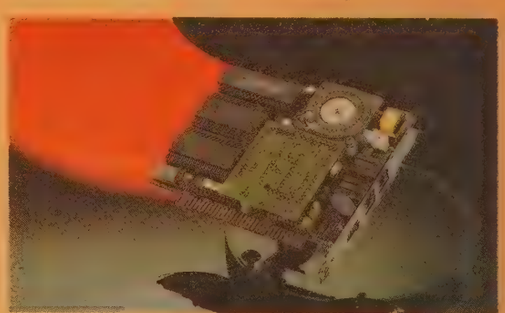
Evercom 12 Modem

- 300/1200 bps speed on a short card
- Hayes and Bell 212A compatible
- Supports tone and pulse dialing
- Automatic answer and voice/data switching
- Bitcom software included

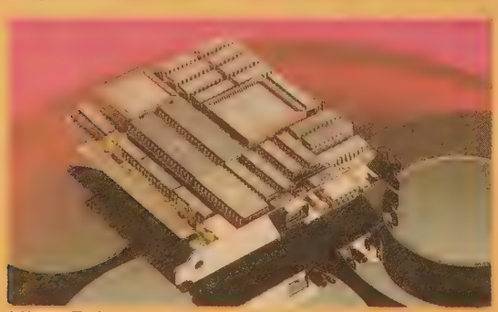


EPGA

Excel Stream-20

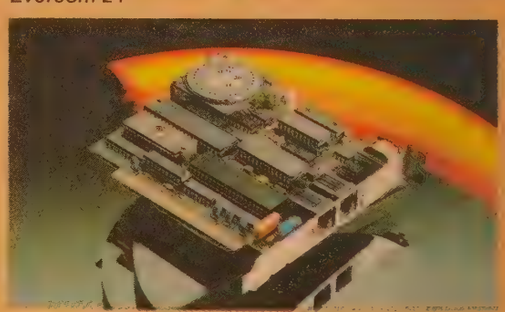


Evercom 24



Micro Enhancer

Excel Stream-60



Evercom 12

Everex Edge

Excel Stream 60-8

Evercom

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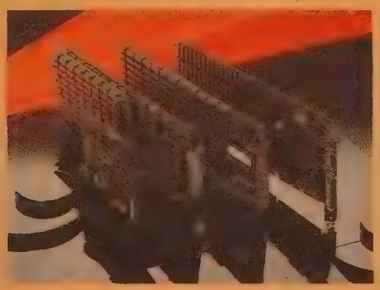

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- Parallel ports LPT1-LPT3
- Software included

Magic Card 16

- Up to 2MB of extended memory for AT
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- Configurable parallel and serial ports

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Everdrive 20MB External

- Half-height, 20MB formatted capacity
- ST-506/ST-412 interface
- 65 msec average access time
- Dedicated head shipping zone

Everdrive 40MB Internal

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- 40 msec average access time
- ST 412 interface
- 20,000-hour MTBF

Everdrive 72/80MB External

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- 30 msec average access time
- 20,000-hour MTBF
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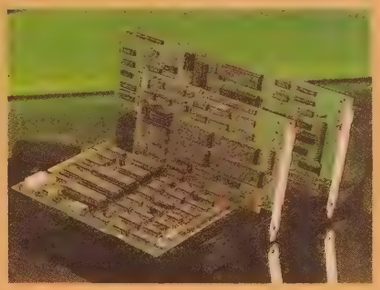


OEM PRODUCTS

EV-826 Tape Formatter

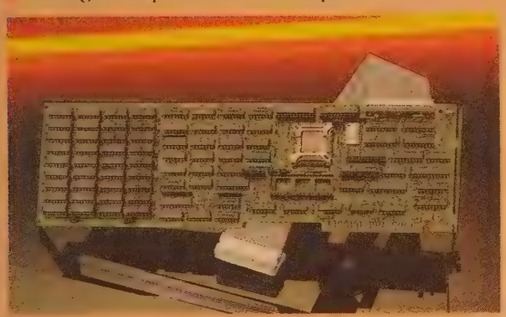
- Onboard 8K RAM for data buffer
- Standard QIC-36 drive interface
- QIC-02 interface for host adapter

EV-332 Hard Disk/Floppy Controller

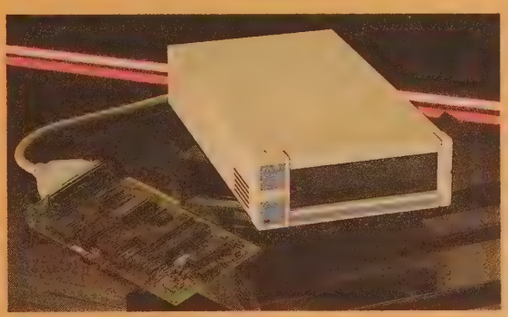
- Reduced height
- ST506/412 interface supports 2 hard drives
- 2:1 interleave factor
- 32 bit ECC
- Supports 2 floppy drives

EV-1800 AT Mother Board

- 10MHz zero wait state 80286 CPU
- 512K RAM, expandable to 1MB
- Six 16-bit and two 8-bit slots
- I/O ports and clock calendar

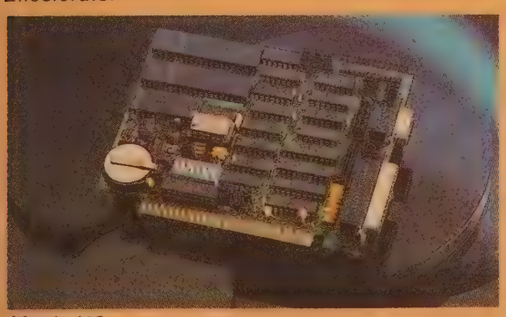


Excelerator

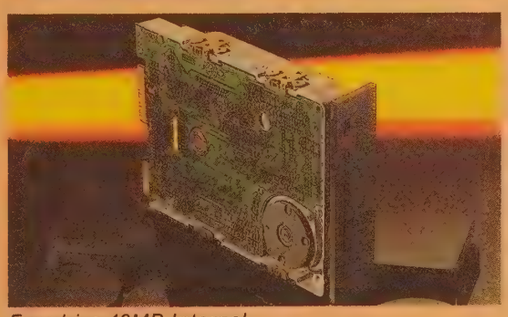


Everdrive 20MB External

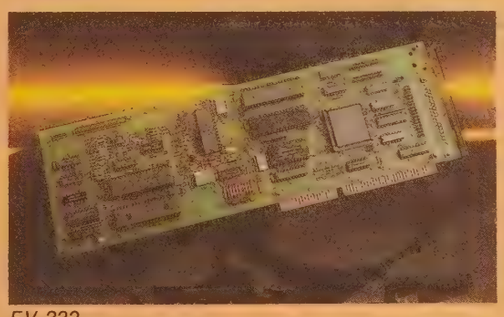
EV-826



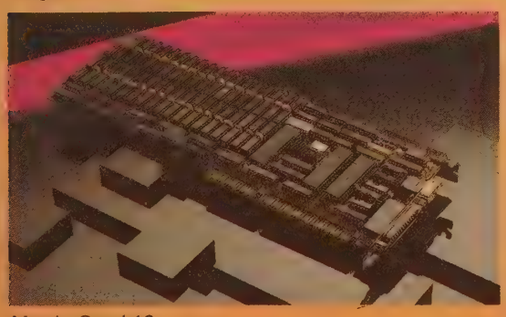
Magic I/O



Everdrive 40MB Internal

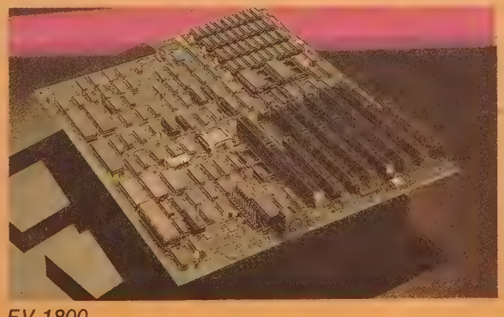


EV-332



Magic Card 16

Everdrive 72/80MB External



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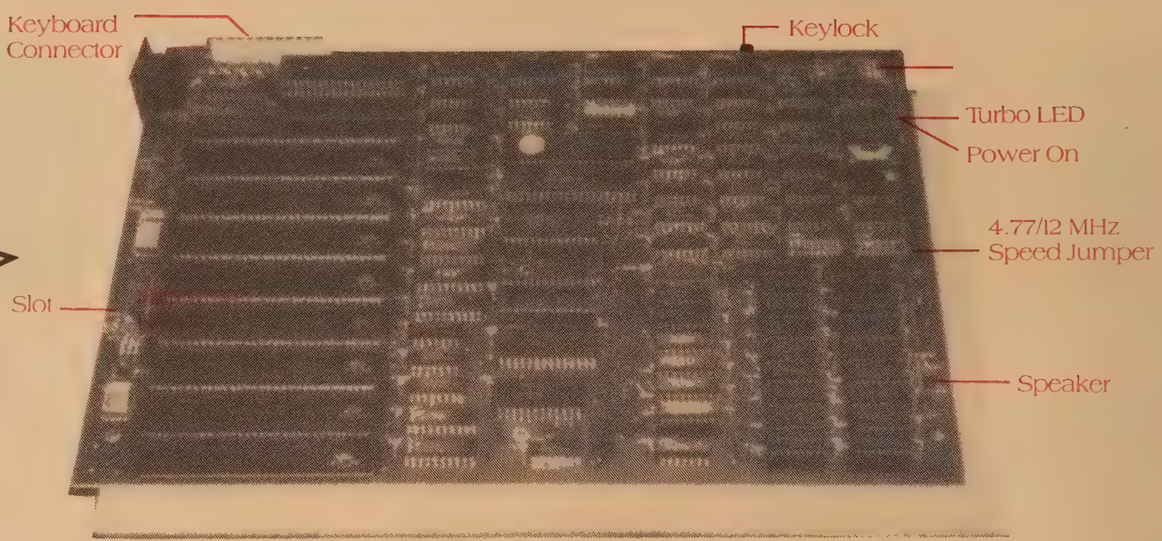

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penalties of $2,000 per day" and can't have the machines certified until they stop selling them. "Typically Far East clones" were caught, he added. "They're bringing in sub-assemblies and selling complete systems without certifying them. The interference problem is severe, and people who purchase uncertified computers are doing it at risk—we might require that they stop using them." Mr. Freeman displayed one egregious sub-assembly violator, a machine which said "American Research Corp." on one side, "Five Star" on the back.

One other thing—accelerator boards to speed up your old machine will now be classed as peripherals by the FCC and manufacturers must now have the FCC certify them as complying with its emission regulations before selling them. (Previously they were considered sub-assemblies, and didn't have to be checked.) Modems typically have to be certified on two counts, once for radio emissions and again against damages to the phone line. NOTE: The FCC maintains a public access link via modem to answer questions and provide more information. The number is below. CONTACT: Federal Communications Commission, (301) 725-1072.

Hayes V-Series Skips 4,800, Goes Up To 9,600 Baud

Hayes finally joined the 9,600 baud race as the top end of its new V-Series of modems. The V-Series adds new error controls, data compression, and a system for automatically figuring out the fastest, easiest way to get your file from here to there. Hayes modems remain very pricey, up to $1,300 for the 9,600 baud modem with *Smartcom III* software, but they're having a sale on their V-Series modem enhancer (which gives your old modem their new capabilities)—$200 through September. *Smartcom III* is also up in price, to $250, from the old version. Not all dealers will sell the new products: Hayes is putting new requirements on all dealers who sell the V-Series. (Sounds a lot like IBM with the PS/2.)

The modem software battles are also heating up in the wake of *Crosstalk*'s being bought by DCA of Alpharetta last year. Hayes will upgrade *Crosstalk* users to *Smartcom III* for $60 maximum. CONTACT: Sharon O'Brien, Hayes, (404) 449-8791.

All In All, A Very Successful Show

The Interface Group claimed that new Spring/COMDEX attendance records were nearly set by Tuesday, and this year's show would certainly be the most successful on record. The show floor certainly *looked* crowded, and interviews with exhibitors seemed to bear out the organizer's happy talk. "Business is great," "much better than we expected," and "it's a great show" were typically said with real enthusiasm this year.

The major theme, when all was said and done, may be the short-term vindication of the old Compaq, as opposed to IBM PS/2, standard in personal computing. Mouse-driven painting, publishing, and engineering programs were all shown under MS-DOS and looked a lot like big Macs, right down to their black-on-white screens or real, live TV pictures. (Compaq actually skipped the show, we were told by another reporter with dead seriousness, because they already had "plenty of dealers.")

Apple Laptop Nearer?

CUPERTINO, CA (NB)—Apple is currently evaluating liquid crystal display screens for laptop

BABY AT 30 MB SYSTEM

- 6/10 MHZ, 80286 CPU
- 640K RAM
- ONE 360K DISK DRIVE
- **30 MB HARD DISK ST238**
- MONO-GRAPHICS/PRINTER CARD
- 180 WATTS POWER SUPPLY
- BABY AT SLIDE CASE
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- 48 HOURS BURN-IN

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FULL AT 40 MB SYSTEM

- 6/10 MHZ, 80286 CPU
- 1 MB RAM
- ONE 360K DISK DRIVE
- ONE 1.2 MB DISK DRIVE
- **40 MB HARD DISK ST4051**
- MONO-GRAPHICS/PRINTER CARD
- 200 WATTS POWER SUPPLY
- AT SLIDE CASE
- TTL SWIVEL MONITOR
- 5060 KEYBOARD
- 48 HOURS BURN-IN
- MS-DOS

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10 MHZ XT SYSTEM

- 4.77/10 MHZ, 8088 CPU
- 640K RAM
- TWO 360K DISK DRIVES
- MONO-GRAPHICS/PRINTER CARD
- 150 WATTS POWER SUPPLY
- AT JR CASE
- TTL SWIVEL MONITOR
- 5060 KEYBOARD
- 48 HOURS BURN-IN

$650

8MHz Turbo Motherboard	99
10 MHz Turbo Motherboard	109
Baby AT Motherboard 6/8, 6/10 w/ OK	365/395
AT Motherboard 6/8, 6/10 w/ OK	409/439
Turbo Mono-Graphics Card, without/with Printer Port	60/70
Color Graphics Card, without/with Printer Port	48/60
Multi I/O Card	75
Floppy Controller Card	35

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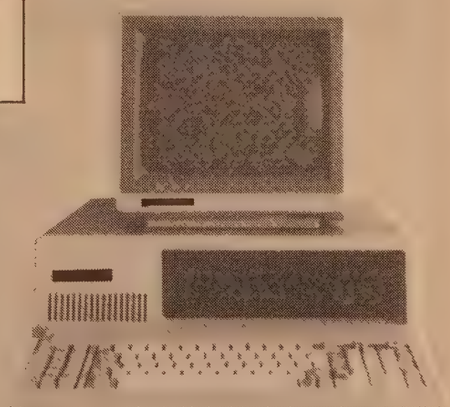

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PHONE: _____
I PLAN TO BUY A COMPUTER WITHIN: _____

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versions for a Motorola 68000-based portable Macintosh code-named Malibu, according to *PC Week*'s Jim Forbes. The report, the most detailed yet on the unannounced machines, says two versions of the portable Macs are in development—a low-end one megabyte memory unit with SCSI and mouse ports, and a version with floppy disk drives and a 20 megabyte hard disk with an optional electroluminescent display. Rumors of the portables have been circulating for years, but the din has increased considerably recently.

The screen most likely to succeed, according to the report, is called the Active Matrix LCD, which has a very high contrast display, roughly twice that of the popular supertwist technology. The machines are expected to retail for around $2,500, if they reach the market. As expected, an Apple spokeswoman had no comment on the report.

Macintosh Juggler Will Force Software Re-Writes

PALO ALTO, CA (NB)—Speaking before the Software Entrepreneurs' Forum last month, former Macintosh team member Andy Hertzfeld said Apple's coming multitasking operating system, called Juggler, will not be able to "juggle" existing Macintosh applications unless they are modified. He said Apple could have opted for a Juggler which could enable several programs to run at once on existing Macintoshes, but chose not to, a fact which he says "is unfortunate for users." Apple showed Juggler at a software developers conference in April and has announced it will be released in late summer or early fall. If Hertzfeld's comments are true (he's known for his credibility), there are expected to be very few balls available when the Juggler makes his debut.

Improved Appleshare Due Next Month

CUPERTINO, CA (NB)—Within six months of its introduction, *Appleshare*, Apple's file server software, will have it first upgrade available in July, designed for use on the Macintosh SE and II. Apple officials deny the issue of Version 1.1 is due to reports of system crashes (one happened during the January *Appleshare* news conference), but Apple's desktop communications manager Peter Friedman does say the upgrade "improves the performance of applications running in the foreground on the server."

Hewlett-Packard Readies Macintosh Scanner

PALO ALTO, CA (NB)—Hoping to cash in on the growing market for Macintoshes and the desktop publishing field, Hewlett Packard will introduce its first Macintosh scanner in August or September. The HP ScanJet, currently for HP and IBM compatible workstations, retails for $1,495 and provides a respectable resolution of 300 dots per inch and recognition of 15 different gray shades on a scale. HP also will introduce a page feeder, an interface card to hook the Mac up to the ScanJet, and software to run the system. CONTACT: Dick Harmon, Hewlett Packard, 415/857-4225.

Apple Hit By $1 Billion Lawsuit

REDWOOD CITY, CA (NB)—An LCD design company is suing Apple Computer for $1 billion on

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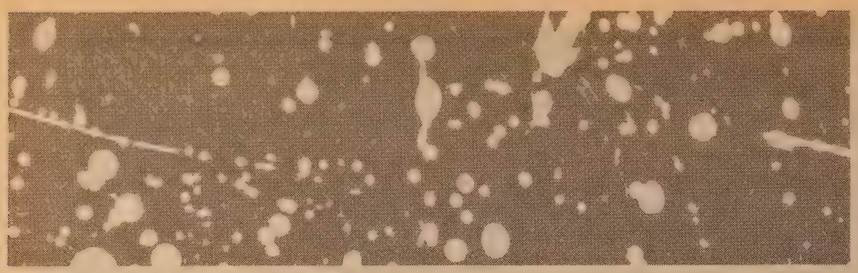

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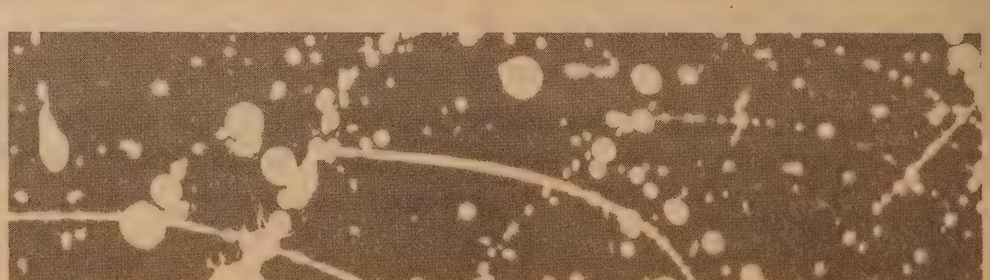

the grounds that Apple broke a $10 million contract for development of a flat panel computer display screen in 1985. The suit also sheds light on the battle between Steve Jobs and John Sculley, which led to the ouster of the Apple co-founder in 1985.

Woodside Design Associates, which filed the suit in San Mateo County Superior Court, says that Steve Jobs had given oral and written commitments for the screen development, leased space for the company's research facility, dubbed Applelabs, and further had promised that Apple would buy the company. However, following a power struggle between Sculley and Jobs, the agreement was abandoned and Woodside's project forgotten. Woodside Designs President Steven Kitchen was quoted as saying that Jobs met him at his home, directly after the Apple coup, and said Apple had "screwed Woodside Design."

"This was Jobs' deal, and we know what happened to Jobs deals when Sculley won the power struggle," said Woodside attorney James Hennefer to the San Francisco *Examiner*.

Jobs' Next From NeXT Due Next Month?

PALO ALTO, CA (NB)—Calls to NeXT, Steve Jobs' firm, inevitably get you on "the big red hold" button or elicit the usual "no comment." But reporter Denise Caruso has just discovered that the factory where the NeXT computers will be produced is virtually next door to Apple's Macintosh factory in Fremont, California. As Denise aptly puts it, it just goes to show that "no matter where you go, there you are...." A NeXT spokesman would neither confirm or deny a report that the NeXT workstation would be unveiled in Phoenix at Usenix, a Unix user group show, where Jobs is scheduled to be keynote speaker in July. CONTACT: NeXT Inc., 415/424-0200.

Wozniak's Hand-Held Controller Finally Unveiled

LOS GATOS, CA (NB)—The programmable, hand-held master remote control unit called CORE, which Steve Wozniak's firm CL9 has been developing for two years, was finally unveiled at CES in Chicago and will go on sale next month. The $199 controller will accept macros to turn on, off, or make adjustments to, dozens of infrared-activated devices. With the flick of a button, Wozniak himself demonstrated CORE controlling three VCRs, two TVs and a stereo system. If the high price didn't impress anyone, the technology did. CORE won the CES' innovative design and engineering award.

The next task CL9 will undertake is to produce interfaces for CORE and home security, telephone, and lighting systems. CONTACT: CL9, 408/996-9999.

Computerland Finally Sold

OAKLAND, CA (NB)—But it's not over yet. Eighty percent of ComputerLand, the nation's largest franchised computer store operation, has been purchased by New York investment firm E.M. Warburg, Pincus, and Company for an estimated $200 million, but the future of the 800+ store retail chain is by no means settled. The cash goes to ComputerLand founder William Millard, now living somewhere in the South Pacific. Millard, however, is still locked in battle with investment firm Micro/Vest over the remaining 20% stake—approximately $50 million—in Computer-Land, a battle which saw both sides spinning through the revolving doors of the courthouse last year. Millard is appealing a judge's ruling which awarded Micro/Vest that remaining 20% share in an investment dispute.

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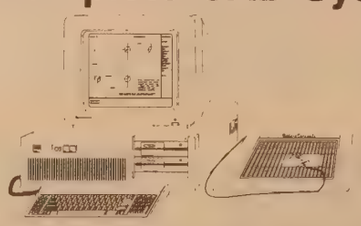

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While a ComputerLand spokeswoman says no changes have been announced, neither has a new head of ComputerLand, and franchisees are waiting for news. The sale is expected to be completed within 90 days. CONTACT: Diane Douglas, ComputerLand, 415/475-3116.

Lining Up For OS/2 Workshops

Seattle, WA (NB)—They're $3,000 a pop, but the tickets are going fast to Microsoft's June and July 3-day OS/2 seminars in Seattle and New York. Software developers are eager to get the information, a copy of OS/2 with debugger and compiler, the documentation (which weighs 75 pounds and spans 2,000 pages) and a year of telephone support from Microsoft software engineers, so some 1,200 at last count are shelling out the steep fee. Why? As Stewart Alsop points out in his *PC Letter*, "OS/2, given IBM's intense support and the system's new capabilities in graphical, multitasking, protected operations, appears to be the only sure opportunity to build truly important new software products for both new and existing companies." He concludes the $3,000 is fair, since a developer could earn upwards of $100,000 with an OS/2-based product.

Iomega's Lawyers Back On The Job

ROY, Utah (NB)—No sooner has it settled a class action lawsuit filed by shareholders than Iomega

IN BRIEF

MICROPRO, San Rafael, CA, says 100,000 copies of *WordStar Professional* Release 4 were shipped in the product's first 100 days. *WordStar* has an installed base of two million users.

KAYPRO, Solana Beach, CA, is the first Intel 80386-based computer manufacturer to cut prices on the industry's newest micros. Kaypro has shaved $500 off the price of three of its 80386-based computers: the Kaypro 386 Model A, the 386 Model E-40, and the Model E-130. Kaypro has also slashed $500 off its EXTRA turnkey desktop publishing system.

TRAVELING SOFTWARE, Bothell, WA, introduced a snap-on memory upgrade for Tandy 100 and 102 portables at COMDEX. The Booster Paks, available now, start at $429 and provide up to 2 megabytes of extra RAM.

SEATTLE, WA travelers can fly easier knowing their city is one of the first in the nation to get a highly sophisticated new computer system to assist air traffic controllers. The hardware reportedly works ten times faster than most air traffic control computers, alerts workers to potential mid-air collisions, and keeps track of the distance between planes.

WYSE TECHNOLOGY, San Jose, CA, has purchased Link Technologies of Fremont. Both are terminal manufacturers. The sale price was not disclosed.

MICROSOFT has bought a $1 million chunk of Natural Language Inc., a Berkeley-based producer of, right, natural language-processing software. Microsoft gets the rights to develop and incorporate into Microsoft products NLI's natural language technology.

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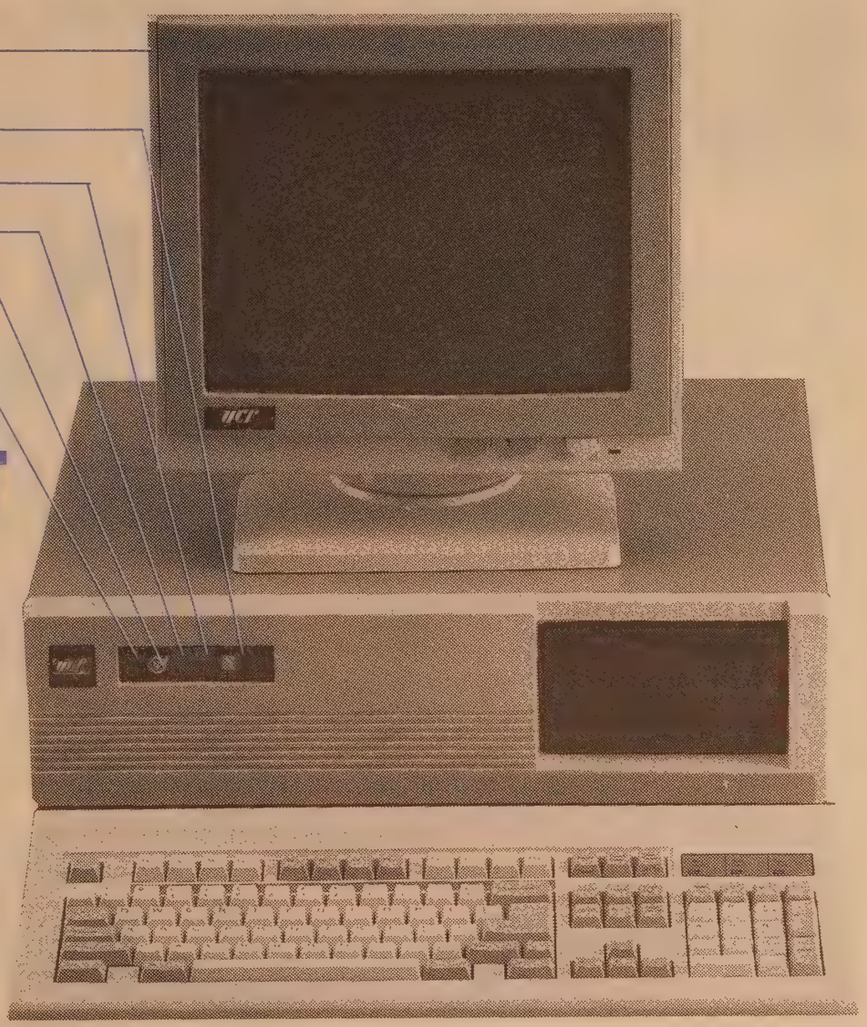

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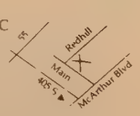

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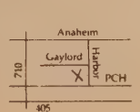

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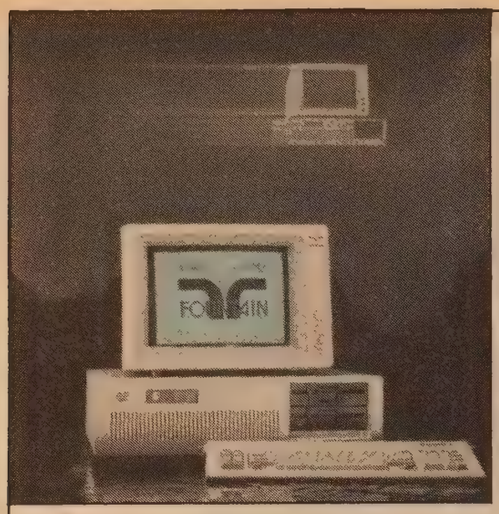

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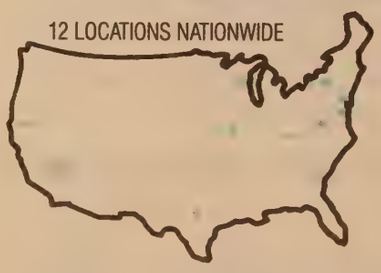

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Corporation was sued again—this time by the formidable Eastman Kodak. Rochester, NY-based Kodak claims Iomega failed to honor a three year agreement in which Kodak was to supply head coupler assemblies for Iomega's Bernoulli Box disk drives. Kodak was to receive a regular schedule of purchase orders, but claims Iomega slacked off in demand for the assemblies, and didn't pay its bills—amounting to nearly $1 million dollars. Iomega spokespeople will not comment on this suit. in which Kodak seeks $7 million in fees and damages.

Firm Says Software Caused Embezzlement, Big Losses

IRVINE, CA (NB)—Pertec Computer Corporation of this city is in big trouble with a former customer who says Pertec's software enabled an employee to steal $102,000 and further, cost the company $718,000 in business. The nasty battle, initiated by Cooperative Developers of Lenexa, Kansas, is over Pertec's modification of an accounts receivable program owned by Cooperative Developers, a.k.a. CDIJ Flooring and Interiors. CDI says Pertec's modifications enabled a former clerk to divert funds to his own account, then erase all the files. CDIJ says the fiasco has caused it to lose the $718,000, so it is seeking this amount, and punitive damages, in a lawsuit against Pertec.

NEWSBYTES SOUTH

Compaq Clarifies Stand On OS/2, Promises Support For It and DOS

HOUSTON, TX (NB)—Compaq, which neither bought a booth nor threw a party at last week's COMDEX, still made news by announcing it will support OS/2, the announced operating system of the IBM PS/2 line. The statement by president Rod Canion was headlined "The Myth of OS/2-PS/2 Linkage," calling OS/2 Microsoft's new operating system "designed to be compatible with all 80286/386 systems." Preliminary releases of OS/2, he added, have worked very well on Compaq PCs. The only version worth worrying about is OS/2, Extended Edition, which bundles IBM-made database and communications with the Microsoft-made OS/2. Canion said "users will have the choice of using either standard OS/2 or an extended version. Our plan is to ensure that comparable extensions are available with OS/2 for Compaq customers."

RESULT: Compaq will ship its own Compaq Support Kit to software developers, with goodies like enhanced disk partitioning and a protected mode version of Compaq's hard disk back-up utility. Compaq will also keep supporting MS-DOS, which Canion said is still due for "many future DOS 3.x upgrades" from Microsoft. TRANSLATION: This town's plenty big for the both of us, pardner. CONTACT: Jeff Stives, Compaq, 713/370-0670.

Gulfstream Micro Systems To Be Bought By DEST

BOCA RATON, FL (NB)—Gulfstream Micro Systems Inc. agreed to be bought out by DEST Corp., Milpitas, CA. DEST makes scanner systems. According to DEST, it was Gulfstream's EZ-Fax board, which lets PCs and compatibles pass files with digital facsimile machines, which made the buy-out attractive. DEST quoted CAP International as saying that facsimile revenues in 1987 will reach

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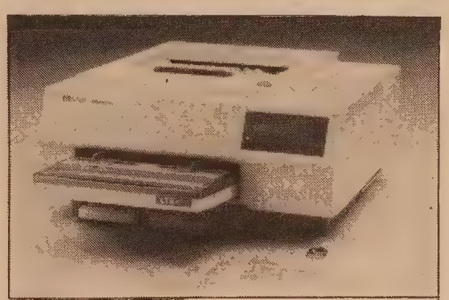

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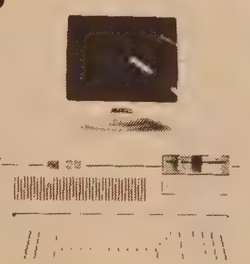

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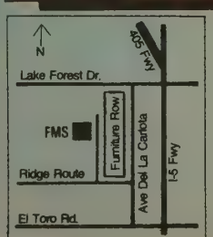

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DEALER INQUIRIES INVITED

Desktop Publishing Overblown?

TEMPE, AZ (NB)—Media hype—that's what researchers call the desktop publishing "revolution" we've been reading so much about. The Sierra Group, a market research firm, has just surveyed 500 companies and found that only one in five plans to buy a desktop publishing system this year—and of those, most (72%) will purchase PC-based systems. Sierra Group spokeswoman Marty Gruhn reportedly said demand for desktop publishing systems will be brief and intense; "After that market penetration will quickly ensue and vendor shakeouts will follow."

Meanwhile, at the National Computer Graphics Association forum on desktop publishing, analysts predicted the next generation of desktop publishing software will be designed for specific applications, such as books, advertising, illustration, or technical documents. Current desktop publishing products will be caught in the squeeze from the high end, and a low-end of more sophisticated word processors.

So if desktop publishing's appeal is limited, where is the next revolution? If you ask a whole number of people, including Forethought's President Rob Campbell, it's in the field of "desktop presentations." He told *Softletter*'s Jeffrey Tarter there are 10-15 million "frequent presenters" who currently need transparencies for overhead projectors, or send out for batch-processed professional slides. If a micro can expedite these tasks and make them more professional, the market is wide open. CONTACT: Rob Campbell, Forethought, Sunnyvale, CA 408/737-7070.

$1 billion, and PC fax products will have 25% of that growing market by 1990. GMS president Gregory Friedman said the merger would be a link between scanners and desktop communications.

No price was disclosed, but DEST is publicly traded on NASDAQ and its shareholders will have to approve the transaction. CONTACT: Gregory Friedman, Gulfstream Micro, 305/994-6500; DEST, Patrick Jones 408/ 946-7100.

PECAN GOLDEN CHIPS

HARRIS CORP., Melbourne, FL, sold its Microwave chip division in Milpitas, CA to Litton Industries Inc. for an undisclosed amount of cash. The division was called a pioneer in the development of gallium-arsenide (GaAs) circuits.

HAYES MICROCOMPUTER PRODUCTS INC., Norcross, GA, donated its $500,000 Modula 2 Software Validation Suite to the Georgia Tech Research Corp. The suite consists of over 800 programs used to test Modula 2 written by Dr. Nicholas Wirth, who also wrote Pascal. Any money earned from using, selling, or licensing the suite will be used to support a scholarship in the name of Dr. Joseph Pettit, the former Tech president who died last year.

UNISYS, Detroit, announced it will call in its $200 million in 7 1/4% convertible subordinated debentures July 1, at 106.525% of face value plus interest. If you act by June 26, however, that $1,000 debenture can still be turned into 12.88 shares of Unisys common.

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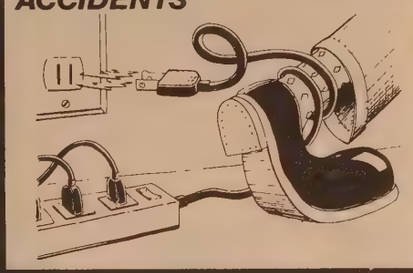

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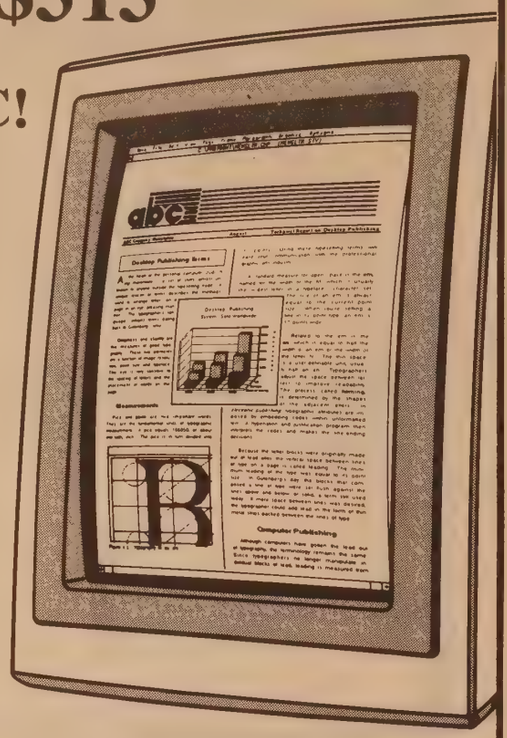

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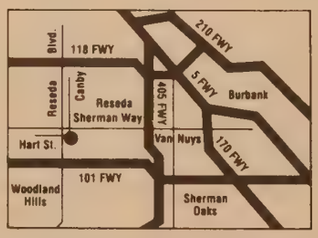

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New Quadram Line

NORCROSS, GA (NB)—Quadram may need a score card to help people sort through its new product line, so Quad-deep in Quad-names is it. There are the QuadEGA+ and QuadEGA ProSync graphics boards for NEC's new MultiSync monitors—they include an add-in board called FutureCard to get better resolution, with drivers bundled for *Windows, GEM, AutoCAD* and *Lotus 1-2-3* (more on the way). There's the Quad386XT accelerator board with its Weitek WTL 1167 math co-processor to give your PC the number-crunching abilities of a super-mini. There are the Model 30 Quadboard and Quadboard PS/Q, both multifunction cards for the PS/2, as well as QuadMEG PS/Q and QuadPort PS/Q, which add either memory or ports to the new IBM line. And there's the QuadHPG Series 2, a monochrome adapter based on the Intel 82786 graphics co-processor, which won't ship until September because Intel can't keep up with demand. And there are new models of the Ricoh-engine QuadLaser printers.

Finally, they dropped prices on a lot of old products, like laser printers and EGA boards. CONTACT: Annette Gustafson, CAM Group, 404/925-7634.

Meanwhile, Elsewhere At Intelligent Systems

ATLANTA, GA (NB)—Did you know that Intelligent Systems MLP still competes against itself in monitors despite the sale of Intecolor Corp., which went to its first COMDEX as an independent with its color terminals and monitors last week? Yes, Princeton Graphics and Quadram, both Intelligent Systems companies, both make and sell monitors and compete against each other.

The rest of the company, meanwhile, is getting the act together. Datavue's Sotek-made Spark and Snap 1+1 were big hits at COMDEX, and Datavue used the attention to pitch its new 80386-based desktop model. And I ran into Bill Goodhew of Peachtree Software, another ISC company, who cheerfully claimed they're selling 4,000 copies of their new 8-In-1 accounting package each month.

Finally, what's the difference between a NASDAQ-traded publicly company and a private limited partnership on the American Stock Exchange? Not much except more profit, to judge from quarterly reports in ISC MLP sent last week. With net income of $1.775 million, 18 cents a share, and sales of $44.405 million, against net of $1.156 million, 10 cents, on sales of $30.310 million for the March quarter a year ago, these companies may yet be glad they stayed together.

TI Opens Software Migration Center In Austin

AUSTIN, TX (NB)—Texas Instruments has opened a center to help resellers move software to its TI System V operating environment. Conversion and performance assistance, consultation and evaluation to TI value-added resellers (VARs) will be offered free of charge. The migration work can even be performed before the VAR commits to selling TI equipment. CONTACT: TI Migration Center, 512/250-7070

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NORCROSS, GA (NB)—It started as a little custom software job for a local computer distributor, but now Nick Christie's Catalog-On-A-Disk is threatening to become a neat product in its own right. "We originally made it a read-only program so a local distributor, The Super Source, could update its catalogs. They sent out the results, then their

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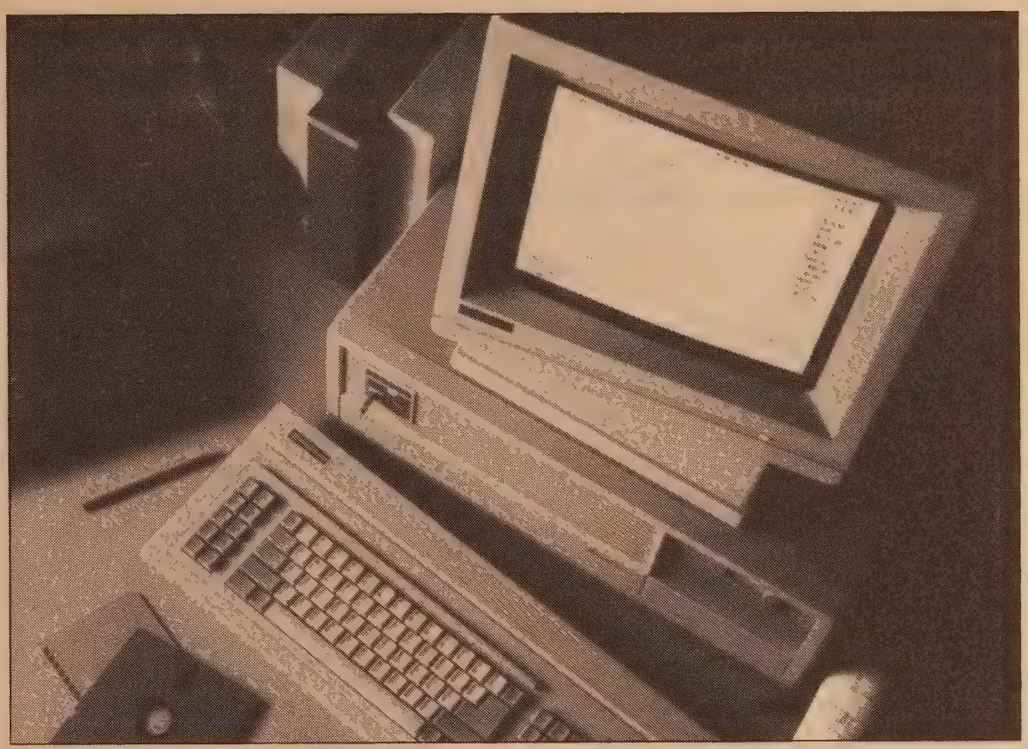

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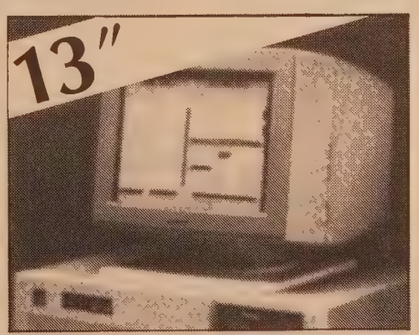

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The complete version of the program, *PC Catalog II*, is now out for $199. That lets you update your catalog. Then, for another $49, you can get the read-only program so you can send your catalogs out, and customers can't change them. "We'll even customize the banner screens, too, so when the customer opens it up they get your name, not ours," says Christie. CONTACT: Nick Christie, Catalog-On-A-Disk, 404/446-5339.

Hayes—Breaking Up Is Hard To Do

NORCROSS, GA (NB)—She liked high-art and powerful people, he preferred working with powerful computers. So now Dennis and Melita Hayes are divorcing, and ownership of modem frontrunner Hayes Microcomputer Products Inc. is in court. Dennis wanted an amicable, no-fault divorce and filed papers with Fulton County in March. Melita's counter-claim lists the Hayes companies among the "marital assets" to be divided. The company calls this "purely a personal matter," but how can it be when one of the assets to be divided dominates its market and had estimated annual revenues of $135 million? Will the company stay private? Will it be sold, at least in part? Stay tuned. CONTACT: Jane Dryden, Hayes, 404/449-8791.

PECAN CHIPS

METIER MANAGEMENT, Houston, released Artemis Project, a former mainframe-based project management program. It requires an XT or AT with 512K RAM and a 10-30 megabyte hard drive, plus DOS 2.1 or higher. Metier is a subsidiary of the Lockheed Corp.

EXCALIBUR SOURCES, Atlanta, announced version 2.0 of its *Exsell* sales program, which automates prospecting. Now it's got built-in word processing and new telemarketing management features. It requires a PC compatible with 128K of RAM, a hard disk and modem, or a network with 640K of RAM per node. The single user version costs $395.

WELLS AMERICAN CORP., West Columbia, SC, announced it will begin deliveries of an Intel 80286-based AT compatible running at 14 MHz in 30-45 days. The company's current machines run at 12 MHz.

TANGENT TECHNOLOGIES, Norcross, GA, began shipping Tangentshare, which implements the Appletalk Filing Protocols (AFP) on IBM PCs. The product had been announced in January, and costs $350.

NEWSBYTES EAST

Analysts Pan IBM Meeting, Suspect PS/2 Not Selling Well

NEW YORK (NB)—Wall Street analysts were unhappy with what they heard and didn't hear at last week's meeting with executives from International Business Machines. As a result, IBM stock fell $1.50 a share to 158⅛ the next day. Big

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Blue trotted out Edward Lucente, chief of U.S. marketing, to talk to the analysts, who apparently really wanted to hear about IBM's financial picture, not its marketing plans. The analysts also raised rumors that the new, highly-touted PS/2 line of personal computers isn't selling up to expectations. IBM denied the rumors.

In the meantime, IBM has approved 4G Data Systems Inc. of Staten Island to become a value-added dealer for the PC-Token Ring Network Integrator products. 4G said it has authorization to integrate and sell all of the hardware and software going into the IBM local area networks, and all of Big Blue's micro-to-mainframe products.

A third tidbit from IBM-land. The company says it will establish advanced computing centers in Rome and Tokyo for number-crunching applications. The two new centers will join two established last year in Kingston, N.Y. and Palo Alto.

Senate Leaders Urge Reagan to Hang Tough On Japan Sanctions

WASHINGTON (NB) — Four important Senate leaders last week urged President Reagan not to lift trade sanctions against Japan until "irrefutable evidence" establishes that Japan is living up to the semiconductor accord of last year. Senate Majority Leader Robert Byrd (D-W.Va.), Minority Leader Robert Dole (R-Kan.), Finance Committee Chairman Lloyd Bentsen (D-Texas) and John Danforth (R-Mo.), an influential Finance Committee member, wrote to Reagan at the Venice economic summit. The four warned Reagan that lifting sanctions "could damage future U.S.-Japanese trade relations and prospects for enactment of a sensible trade bill." According to reports in the Washington Post, the Reagan Cabinet has deep divisions on lifting sanctions. Secretary of State George Shultz and Treasury Secretary James Baker are in favor of lifting the sanctions. Commerce Secretary Malcolm Baldrige and U.S. Trade Representative Clayton Yeutter are opposed.

Toshiba Faces Pentagon Investigation Of Illegal Sales To Russia

WASHINGTON (NB)—The Associated Press reported last week that the Pentagon is holding up contract awards to Toshiba Corp. because the company may have been involved in illegal exports to the Soviet Union. Anonymous Pentagon officials told the wire service that there would be no move to suspend Toshiba as a defense contractor, pending the outcome of the investigation. In the meantime, the sources said, "there's a stall on." The Air Force, for example, has delayed selection of a contractor for $100 million worth of laptops, because Toshiba is a primary bidder for the job.

The AP says its sources indicate that Toshiba and Kongsberg Vapenfabrik, the Norwegian state-owned arms maker, are suspected of selling four large milling machines to the Soviets in 1985. If so, it's a violation of export control rules adopted by the U.S. and its allies, including Norway and Japan. The milling machines could help the Soviets make better, quieter, submarine screws.

US Computer Exhibit Opens In Moscow

WASHINGTON (NB)—An exhibit of American home and personal computers, including Apples, Amigas, and Ataris, opened in Moscow last week. The exhibit by the U.S. Information Agency is the first U.S. exhibit in the Soviet Union in the eight years since the Soviet invasion of Afghanistan. The computer exhibit will visit nine cities in the

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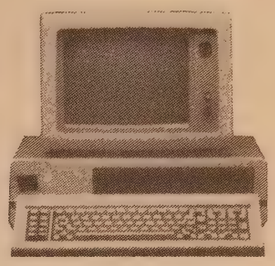

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Soviet Union over the next 18 months. It is expected to attract as many as 750,000 visitors a day in each city. The show is called "Information U.S.A." It results from an agreement between President Reagan and Mikhail Gorbachev at the 1985 Geneva summit meeting. A Soviet exhibit on life in the U.S.S.R. opens in New Orleans in August. It will also visit nine cities.

Lotus And Telerate To Link Up New Financial Software

CAMBRIDGE, Mass. (NB)—Lotus Development Corp. and Telerate Inc. have agreed to develop and market software for fixed-income and foreign-exchange traders. Lotus will write software that will let users of Telerate data automatically dump the data into spreadsheets for analysis. Telerate, based in New York, supplies financial data. Dow Jones & Co. owns 45 percent of Telerate. The companies did not announce when the new software will be on the market or what its price will be. CONTACT: Lotus Development Corp., Cambridge, MA, 617/577-8500.

Data General Unveils Link To IBM Line

WESTBORO, Mass. (NB)—Data General Corp. has introduced hardware and software products that make it easier for users of DG's MV minis to talk to IBM PCs and clones. The products are called GD-pc*I. They allow users to build networks off the MV that recognize the PCs as terminals. CONTACT: Data General Corp., Westboro MA, 617/366-8911.

NEWSBYTES JAPAN

Microsoft Proposes Japanese PC Standard

TOKYO (NB)—With Microsoft's venture into MSX virtually dead, the company is trying again to develop a higher standard for Japanese personal computers and it appears they're getting the support of major Japanese companies. According to the *Japan Industrial Journal*, the new PC standard is IBM PC/AT compatible. It will be based on an 80286 CPU, the Phoenix BIOS, and ASCII's (Tokyo) graphic LSI. Machines based on this standard will support MS-DOS and MS-OS/2. A Japanese language feature will be developed by the Tokyo branch of Microsoft. Microsoft plans to announce the PC's specifications in order to license 15 Japanese computer makers by the end of the month. The company says the first product will roll off an assembly line by year's end. The new micros are expected to directly compete with NEC's dominant PC-9801 computer in Japan, if they're lucky. However, analysts say such a compatible micro standard may draw anger from Big Blue. Other analysts says those highly competitive PCs, which can easily be converted to an English language version, could be shipped en masse to the U.S. market in the near future. If that happens, it may rekindle the by-now ubiquitous Japan-U.S. trade problem.

SUSHI BYTES

FUJITSU'S 80386 MICRO—Fujitsu will start marketing an 80386-based powerful 32-bit personal computer at the end of the year. The prices vary with the models from US$8,143 to $12,071. The company has already been selling the 68020-based business computer, the FACOM G150, in Japan.

Japanese Logo Writer Debuts

TOKYO (NB)—Logo Japan, a Japanese subsidiary of Logo Computer in Canada, will release a Japanese version of *Logo Writer* early 1988. Logo Writer is an educational tool for teaching a turtle graphics-oriented computer language, Logo. *Japanese Logo Writer* uses a Kanji conversion front-end processor developed by Kanri-Kogaku-Kenkyusho, a company that helped develop Japanese *Lotus 1-2-3*. Logo Japan's spokesman says the prototype *Logo Writer* will be shown this July. CONTACT: Logo Japan, Aoyama-Honey Bldg., 2-24-12 Minami-Aoyama, Minato-ku, Tokyo 107 (Phone: 03-470-6511)

We Want Japanese Chips: Honeywell, DEC

TOKYO (NB)—Major American computer firms, such as Honeywell and Digital Equipment Corp., have been asking the Japanese Ministry of International Trade and Industry (MITI) to hasten the procedure for issuance of an export license for the chips. Exporting Japanese chips has been extremely difficult since MITI has been watching those exports; its strict surveillance is based on the Japan-U.S. agreement regarding the monitoring of chip prices.

MITI wants to help out those American chipmakers, but it cannot do it alone. In the wake of the trade friction and higher prices of the yen, Atari recently decided to use American chips. However, many American computer companies are still buying computer parts from Japanese firms, despite the situation. Reportedly, Cray's supercomputer has been depending 100 percent on Japanese memory chips. Apple has been using them a lot. Moreover, Digital Equipment Corp. will assemble the VAX series in Japan this July, using lots of Japanese parts.

Ex-Sord President Assembles Low-Cost AT-Compatible In Hong Kong

TOKYO (NB)—Former President Shiina of Sord in Toshiba Group has set up an assembly plant for personal computers in Hong Kong. The new firm, Proside, will build a low-cost IBM PC/AT-compatible computer, getting parts from Japanese and Hong Kong makers. Their PC, the Proside 286, will be equipped with PIPS, which is a best seller programming language of Sord. The Proside 286 will be sold in Japan and the Southeast Asia towards the end of this month. The PC does not support a Japanese language feature.

Lotus Japan Prefers Short Name

TOKYO (NB)—Lotus Development Japan will officially change its corporate name to "Lotus" on June 15. The major reason is that current name is too long to handle efficiently in their routine work. Meanwhile, the company plans to set up more authorized training centers for *Lotus 1-2-3* in Japan. The current 20 centers will be increased to 50 soon. Lotus Japan aims to gain a 15 percent share in the Lotus group's total sales in the world. CONTACT: Lotus, 3-10-11 Toranomon, Minato-ku, Tokyo 105.

Fujitsu And IBM Bury The Hatchet

TOKYO (NB)—Two computer giants, Fujitsu and IBM, have almost settled their three-year long software copyright infringement battle. The issue started when IBM filed a suit against Fujitsu, charging Fujitsu had allegedly infringed upon a 1983 confidential agreement with IBM. In a recent report to the shareholders, Fujitsu mentioned, "Fujitsu has partly settled the copyright issue with IBM, and the two firms have also found solutions to the rest of the points in this issue." According to industry sources, Fujitsu will pay extra royalties to IBM, but the amount will not be so large as to affect Fujitsu's business. This news allowed Fujitsu's stock to recover from a recent plunge. CONTACT: Fujitsu, 1-6-1 Marunouch, Chiyoda-ku, Tokyo 100.

Hitachi Closely Allies With Unisys

TOKYO (NB)—Hitachi and Unisys (USA) have decided to closely cooperate with each other on large-scale computers. Unisys has asked Hitachi to make a central processing unit for its large-scale general purpose computer, the Unisys 1100 Super-90. Their recent agreement is more significant than the current agreement which covers Hitachi's production of CPUs for Unisys. The new agreement says Hitachi will not only produce the chip, but also design it. Considering the rapid appreciation of the Japanese currency, it is not at all advantageous for overseas firms to design and produce chips in Japan. But it seems Unisys has found more values in Japanese high technology, says an analyst. All in all, cooperation is better than split. CONTACT: Hitachi, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100.

Japan Unisys To Open In October

TOKYO (NB)—According to industry sources, Vice President Koichiro Nishikawa of Mitsui Trading will possibly assume the president's post of Japan Unisys, which is scheduled to start business on October 1. Currently, Univac Japan and the Toyko branch of Burroughs (USA) are discussing details of the merger, following the merger of their parent firms in the U.S. Univac Japan is owned 34.2 percent by Unisys (USA) and Mitsui Trading respectively. Mitsubishi Electronics and Oki Electronics are also shareholders. Business in this Japanese subsidiary is going well—Univac Japan's sales in fiscal 1986 increased by 10.1 percent over the previous year. Meanwhile, the Tokyo branch of Burroughs recorded a US$143-million decrease in its sales last year. The future of 8,000 employees for Japan Unisys seems to be quite promising, due to a possible investment from Hitachi and Toshiba.

Atari Turns To American Chip Makers

TOKYO (NB)—Facing skyrocketing price of Japanese chips, the California-based home computer maker Atari will soon cease getting its supply of 256K bit dynamic RAM from Japanese makers. Instead, the company's memory chip will be supplied by American firms. Currently, Atari has been buying 256K DRAMs from major Japanese electronics makers, such as NEC, Toshiba, Fujitsu, and Hitachi. With those chips, the company has been assembling game computers in Taiwan. Due to the higher price of chips in the wake of MITI's chip production restriction order, Atari had to turn to American firms, such as Micron Technology and Texas Instruments. According to a published report, Atari was formerly getting 70 percent of its total parts supply from those Japanese firms. But now the rate has dropped down to 45 percent.

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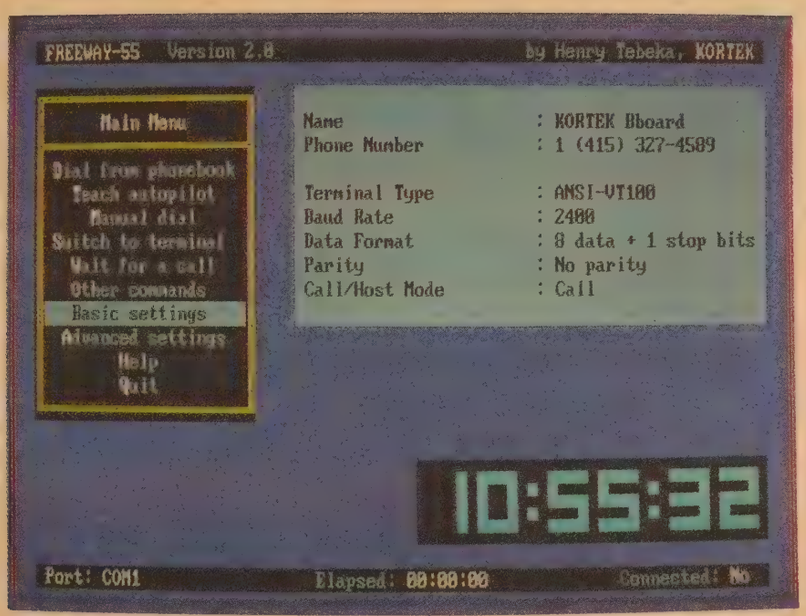

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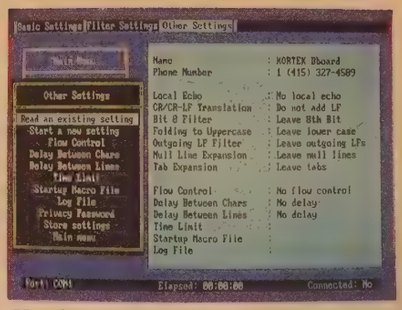
Basic Settings Filter Settings Other Settings
Other Settings
Read an existing setting
Start a new setting
Flow Control
Delay Between Chars
Delay Between Lines
Time Limit
Startup Macro File
Log File
Privacy Password
Store settings
Main menu
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Phone Number : 1 (415) 327-4589
Local Echo : No local echo
CR/CR-LF Translation : Do not Add LF
Bit 8 Filter : Leave 8th Bit
Folding to Uppercase : Leave lower case
Outgoing LF Filter : Leave outgoing LFs
Null Line Expansion : Leave null lines
Tab Expansion : Leave tabs
Flow Control : No flow control
Delay Between Chars : No delay
Delay Between Lines : No delay
Time Limit :
Startup Macro File :
Log File :
Port: COM1
Elapsed: 00:00:00
Connected: No

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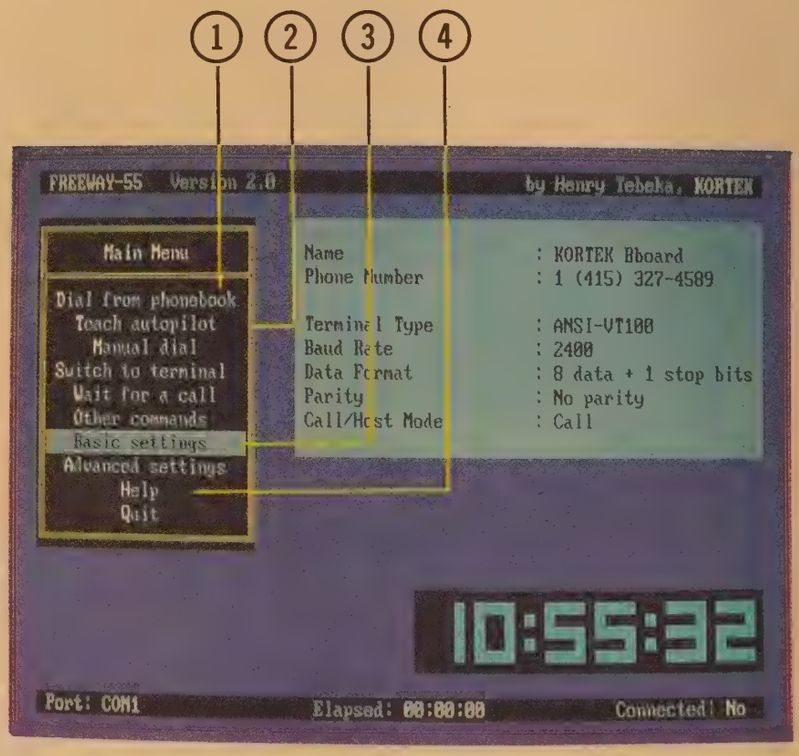

① **Phonebooks:** Freeway lets you store the phone numbers (and other settings) for up to 100 computer systems. You just use the arrow keys to pick the number you want, hit Enter, and leave the dialing to us.

② **Autopilot:** Computer communication is more than just placing a call. You have to log on to the other computer, and often type introductory commands. Freeway provides an "autopilot" to relieve you of this chore. You simply go through these preliminaries once, with the autopilot noting your every move. Then, when you next call, the autopilot will do the work for you.

③ **Setting Up:** Setting up Freeway is a piece of cake! The parameters you need — baud rate, parity, and even the number to call — are gathered in simple menus. To set them, you just zip through with arrows and Enter, and then save them in the Phonebook. Later, changing one or all of them is just as easy!

④ **On-Line Help:** Even though Freeway is very easy to use, we all need a hint now and then. Every line of every menu has on-line help at the touch of a key.

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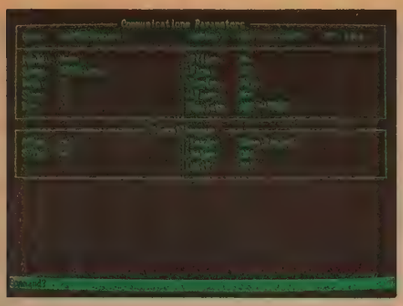

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Clone Makers Undaunted By PS/2

By Robert Beauchamp

Steve Hamilton, PC-Tech distributor:

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Roger Hatfield of Club AT:

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Jerry Bower, product manager at AST:

"We are not overwhelmed at all by the capabilities of the new system. The packaging and manufacturing are quite well done, but there is no real innovation in performance other than a moderate innovation in graphics."

When IBM introduced its new Personal System/2 computers, one might have expected the makers of clones and compatibles to be sent into a panic at its somewhat proprietary nature.

With PS/2's top-secret insides and a micro-channel bus that no one else had, along with a brand new operating system all its own, dire predictions of financial doom were given for those who had been successful at giving you the same thing IBM did, only cheaper.

PS/2 was said to be the ultimate fear of all clone makers: a new, un-copyable, standard.

If clone and compatible makers and dealers were daunted, however, by the actions of IBM, they wouldn't be clone and compatible makers and dealers.

Consider Steve Hamilton, a distributor of PC-Tech computers. He says, "Any time IBM comes out with a new piece of hardware, it provides new opportunities." And the "new opportunities" he's talking about are found in the same area they have always been found: the huge profit margins attached to IBM hardware. The clone makers, he says, will continue to offer more features at a significantly lower price. Now they simply have a wider variety of hardware to sell and higher prices to undercut.

The other great fear with the release of PS/2 was that the clone manufacturers and dealers would be left out in the cold as the market would demand the new IBM standard. Since there was such secrecy surrounding the new machines, it was felt that the clone makers couldn't copy it quickly enough and sales of their current machines would fall flat.

Nothing could be further from what actually happened, according to James Wong of Multi-Tech. "We have seen no negative effect on our business. We are still selling as many as previously, and business has actually picked up. There was a slowdown due to anticipation, but now sales are even better than before."

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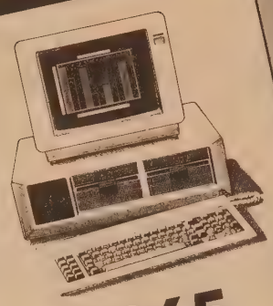

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David Kay of Kaypro:

"PS/2 computers, at least the desktop versions, are fairly easy to compete against."

David Kay, president of Kaypro, agrees. "Besides putting questions into people's minds, there has been very little effect that we can tell."

"A surge in business" was noted by Steve Hamilton. "People who were holding off waiting to see what IBM would release are now buying. A lot of apprehension over what would come from IBM has been released."

Zahid Ali of Stanford Systems offers this explanation for the lack of impact on clone sales: "The people that come in have already made up their minds as to what they want and how much they want to pay."

Roger Hatfield of Club AT also feels that price is an important factor. "We offer the same speed as their six grand machine. But even fully loaded ours is only $2,000. Why pay the extra $4000? That's what people are looking at now. They're saying, I can get the same thing cheaper."

It has been said that IBM introduced its new system to capture the Fortune 500 market. Can clone dealers and manufacturers go head to head with the new IBMs, or are they going to resign themselves to meeting the needs of "everyone else"?

Hamilton has this view. "I think the release won't affect the clone industry as much as the compatible industry. People who are going to buy a clone will buy a clone. But for something like a Zenith the situation is much more competitive."

David Kay, however, feels that "PS/2 computers, at least the desktop versions, are fairly easy to compete against." He cites the lack of expandibility and the power supply as weaknesses in the PS/2 computers.

Jerry Bower, product manager at AST, says: "We are not overwhelmed at all by the capabilities of the new system. The packaging and manufacturing are quite well done, but there is no real innovation in performance other than a moderate innovation in graphics."

Another area clone and compatible manufacturers feel they have an advantage in is in the production of 80386 machines. According to Hamilton, "As far as the 386, there has been no advantage that that IBM has presented. We are hoping, however, that IBM may give us a standard for the 386. The other manufacturers have failed to do this." Jerry Bower also states that there is interest in a standard architecture.

When you talk to clone dealers, they stress high speed at a low price. IBM, however, seems to be stressing features such as enhanced graphics, the proprietary micro-channel architecture and a new operating system.

This has not escaped the clone and compatible manufacturers, who know that the "same speed/lower price" approach won't last forever, at least if they hope to survive.

James Wong says, "We're going to keep a good close eye on the market and see what attributes of the new system are being accepted by the corporate users. This is what will be incorporated into our machines."

Bower says AST will also be keeping a close eye on the market. "Things may change. We're waiting for our customers to tell us what they like about the new system and what they are willing to commit to. We won't be sure about this for the next month or two. We have no changes planned now, but we will be open to changes."

Kay is more specific about his company's plans. "We've been studying the new video. We'll move to that video if it seems a popular way to go and if software is configured to that system. We can already incorporate 3.5" disk drives." Dealing with the micro-channel, according to Kay, is "years away, and will come after incorporating any operating system which has yet to be released."

Much of PS/2's new system (OS/2) has yet to be released. According to Bower, PS/2 is heavier on promises than performance. The 386 machine and the new operating system have yet to be seen. He says, however, that "IBM's hand has been played. This is long term strategy for them. They'll stay with this for three to five years. There is a lot of commitment."

If conventional wisdom were to prevail the clone manufacturers and dealers would give up the high end corporate market to IBM. But if clone makers and dealers were conventional they would be working for IBM.

It is not only apparent that the Personal System/2 computers have not stunted clone sales, but also that clone and compatible manufacturers and dealers have no intention of relaxing the competition. Kim Chan of Tatung says, "We are making a lot of preparations. We are looking seriously into the PS/2 market."

Roger Hatfield sums up the attitude of the clone and compatible manufacturers and dealers when he says "IBM PS/2 is for those people who think they need to buy a name brand. But we're telling them that in reality they don't!" □

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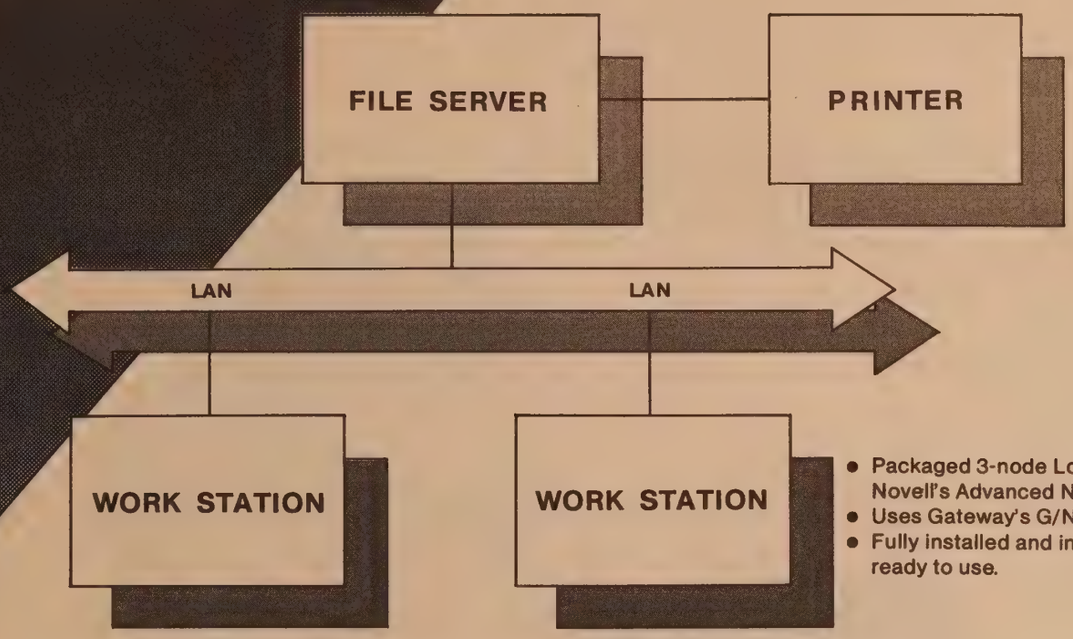

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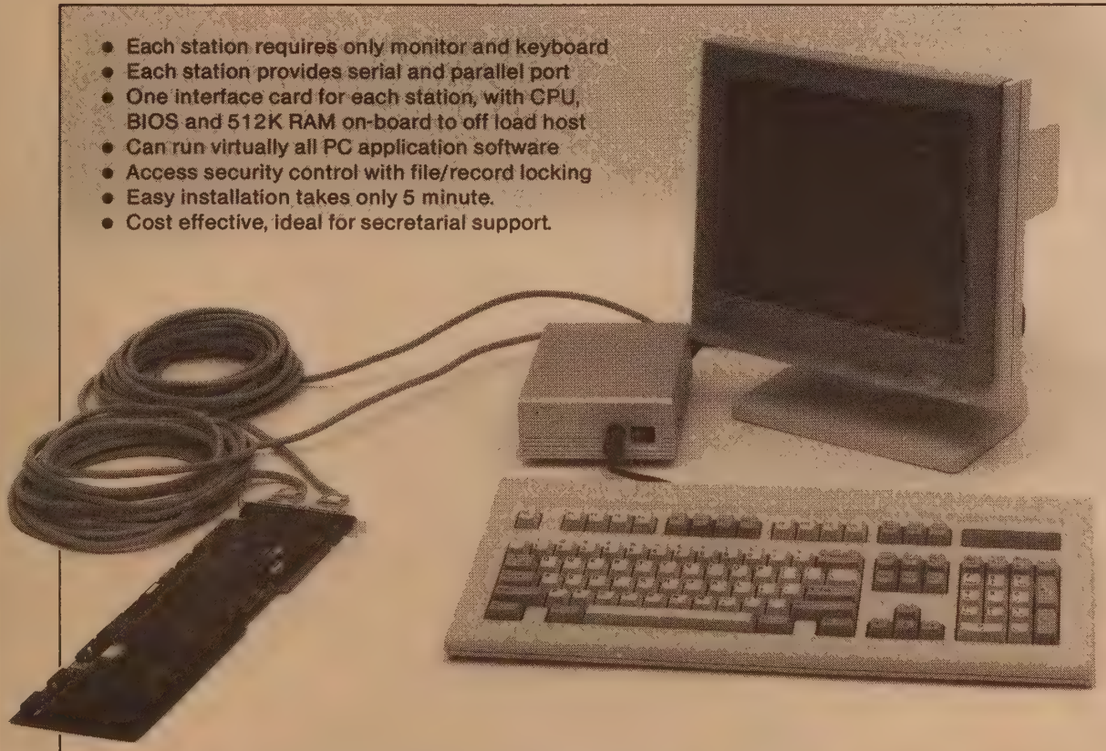

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Sun Workstations Meet The PC Environment

Although Sun workstations tend to be discussed in hushed and reverential tones by certain factions of the cognoscenti, the average PC user may well never have heard of them.

"We don't advertise," grins Eric Schmidt, Sun's vice president and general manager of its software products division, with the cheerful, matter-of-fact assurance of one whose company's chief problem is producing enough workstations to satisfy the hordes lined up to buy them. Not that Sun's resting on its laurels—it spends a whopping 12-13% of its earnings on research and development, compared with the 2-3% that's more typical of the industry.

Based in Mountain View, Sun was founded in 1982 with $4 million in venture capital. In the first nine months of its fiscal 1987, Sun reported a net income of $25.5 million on revenues of $348.6 million.

From its inception, Sun has been at some pains to distinguish itself and its line of 32-bit microprocessor-based systems from the world of microcomputers. Its workstations are most commonly used in networks, though they can be configured for standalone operation. They are typically much faster than personal computers, offer superior graphics capability and provide greater storage capacity. Sun offers a wide range of hardware and software options as well as full product support; its marketing, to clients ranging from corporations to universities and government, is done mainly by its own sales force rather than through a retail/VAR sales channel; OEM contracts with such clients as Toshiba, Eastman Kodak, and Wang Laboratories account for 40% of its sales.

However, as PC-based workstations become more common and the advent of such 32-bit micros as the Macintosh II and the various 80386 machines blurs the distinction between micro and mini, Sun is taking aim at the market share formerly held by purveyors of personal computers in the workstation environment. And, as a result of a series of strategic choices made over the last

PHOTO: BILLY DOUGLAS PAT JOHNSON STUDIOS

Bill Joy of Sun Microsystems: "We intend to build a full-fledged computer company based on microprocessor technology."

They're based on the 68020's 32-bit architecture.

They run a powerful version of UNIX and offer a vast number of hardware and software applications.

They pioneered connectivity and graphical, window-type interfaces.

They are, in short, the act that microcomputer-based workstations like the Macintosh II and PS/2 have to follow.

By Mary Eisenhart and Bennett Falk

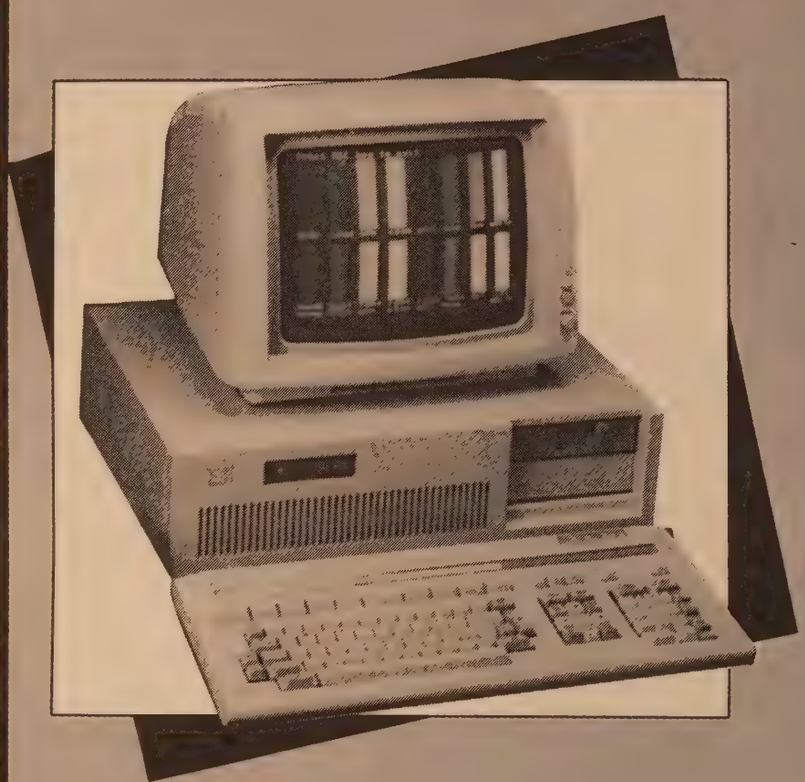
few years, it's positioned to offer a formidable challenge to the PC vendor.

First of all, long before connectivity became a buzzword, and at a time when proprietary technology was the norm in the IBM- and DEC-dominated technical workstation marketplace, Sun made the decision to base its products on the hardware-independent UNIX operating system. (Co-founder and vp of research and development Bill Joy implemented and designed the 4.1BSD version of UNIX at UC Berkeley and was responsible for the memory and networking enhancements to 4.2BSD. He's also the author of the acclaimed screen editor *vi*.)

Further, Sun chose to work cooperatively with third-party developers of hardware and software in developing industry standards. Its third-party program, Catalyst, offers software and hardware solutions for computer aided software engineering, electronic and mechanical design automation, electronic publishing, artificial intelligence, manufacturing, and other applications. One result is that Sun workstations have been quite happily talking to computers from super to micro for some time, even as the PC world is starting to discover connectivity; the company's recent acquisition of Centram Systems West (*MicroTimes*, March 1987) and its *TOPS* package, which lets users of UNIX, DOS and Macintosh computers transparently access each other's files without a central file server, is part of its strategy to incorporate Suns into the microcomputer-based workplace.

Most recently, on April 6 Sun announced a dramatic price reduction on its bestselling entry-level workstation, the Sun-3/50M, from $7900 to $4995. For that $4995, a price which compares favorably with PC-based alternatives (to say nothing of rivals in the minicomputer world), you get a built-in Ethernet connection, 1.5 MIPS performance, four megabytes of memory, and a 19", 1152 x 900 pixel monochrome monitor. You also get the Sun version of UNIX, which merges System V with the 4.2 Berkeley enhancements and

The King of Clones



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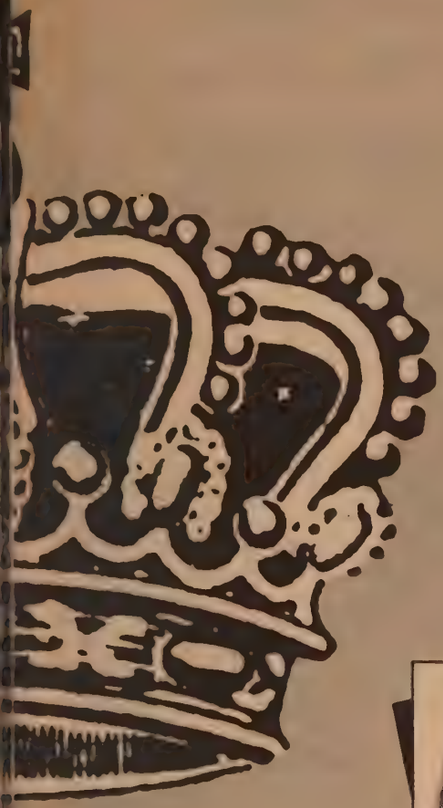

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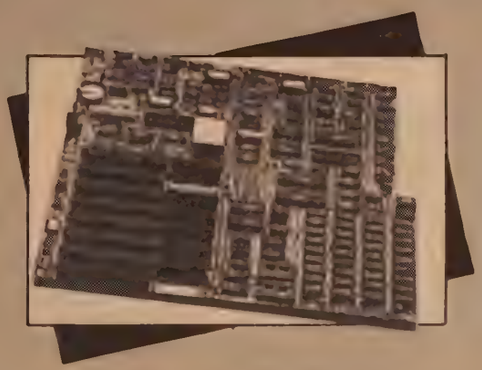

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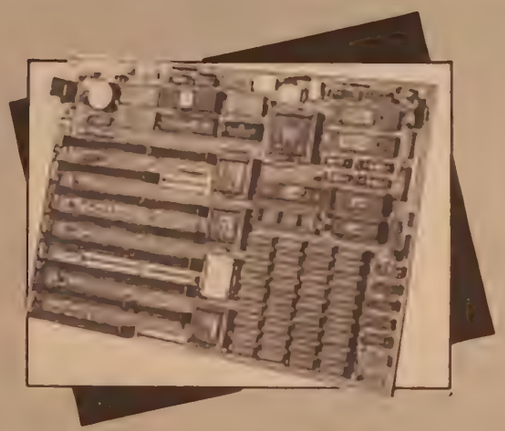

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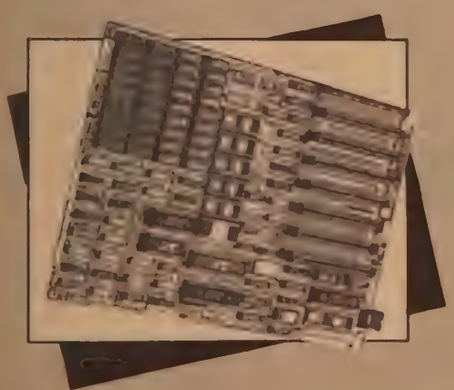

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offers the industry standard Network File System, the SunPro programming environment, and a full complement of software development languages. Should you decide to run the machine as a standalone unit, you can choose from a 3/50M configuration with a 71-megabyte mass storage system and 60-megabyte tape backup for $9995 and a version with 141 megabytes of storage and a 60-meg tape backup for $11,495. At the same time, Sun announced price cuts of up to 50% for its support services and drastic reductions in the cost of memory enhancements.

"We're not merely dropping prices," said president and CEO Scott McNealy at the time of the announcements. "We've anticipated the emergence of the technical PC market and have built the necessary production capacity to capture market share early. Our PC-NFS products give users a transparent migration path from their old DOS environment to UNIX. We already have over 850 technical applications and the system performance and functionality that other vendors are still trying to attain. We believe it will take them a long time to catch up."

He added, "In the meantime, we'll not be sitting still. This is only the beginning. When 1987 closes, Sun will have redefined the workstation market with an exciting series of products and aggressive marketing programs."

We recently had the opportunity to converse with Bill Joy about Sun's history and the philosophy that's shaped it. Surrounded by an impressive assortment of color and monochrome workstations in desktop and tower configurations, he evinced the unique blend of hacker zeal, technical wizardry and obsession with excellence, along with a hefty dose of common sense and business savvy, that seems to distinguish the company.

How did Sun get started?
Sun grew out of a project at Stanford. It was originally an acronym standing for Stanford University Network. It was a project that Andy [Andreas Bechtolsheim, co-founder and vice president of technology], the guy I was just talking to in the hall, had done hardware for in 1980, 1981. His goal was to create a graphics terminal.

Andy's notion of a terminal at the time was something that was more powerful than most minicomputers, with virtual memory and 32-bit architecture and a large bit-mapped screen. I was involved at Berkeley with another project that was doing 32-bit UNIX software. We got together—Andy had gotten together with two people who'd been involved with startups here in the Valley, Scott McNealy, who'd been involved with Onyx, one of the early UNIX minicomputer sort of companies, and Vinod Khosla, who'd been an early person at Daisy, a CAE company. They got together in January of '82 to start Sun, which was incorporated in February of '82.

I think PCs are virtually cheap but really expensive, because it's almost like you had to buy a car and the tires were optional. In a Mac the KEYBOARD is optional—c'mon, give me a break. I mean, they have two keyboards, you're going to have to buy at least one.

What we've really been doing is building computers out of microprocessors. The most notable thing for microprocessors has been microcomputers—PCs, Apple IIs and IIIs, 6502, Macs. We take the same microprocessor technology and build computers, as opposed to microcomputers. Microsystems means microcomputer technology, but they're not microcomputers. So today our product line, microprocessor-based systems, is as powerful, essentially, as anything DEC has. We intend to build a full-fledged computer company based on microprocessor technology. I think most people will be familiar with us for our workstations, but over time they'll see us building larger systems as well.

How extensively are you involved with building larger systems now?
They're larger in the sense of performance—that's [indicating a middle-sized tower] about the largest they get physically. In fact the same processor board that goes into these smaller systems can go in the larger one; the only difference is that you put more disks with it. We have a full performance range from our cheapest machine, a node that goes diskless on a network for like $5000, up to something that may be configured like that [tower], with a gigabyte of fast disk and so forth. That would sell for 50- or 60- or 70,000 dollars.

You recently lowered the price substantially on your low-end workstations. What was the thinking behind that?
Well, it was getting to be inexpensive to manufacture, and I guess we looked at our margins and decided that what we had was the technical workstation, which had very similar features to what people thought of as a technical PC. It was cheaper, in fact, because PCs, when you configure them to be full systems, turn out to be very expensive when you get around to adding the display and enough memory, and the software, and especially the disks that we don't need because we run in a network environment.

There was such a business opportunity, and our strategy has always been to base our prices on the cost, so we just brought things in line with the costs. We've always been aggressive on price, because there's so much elasticity. We're just delivering more value to our customers by our pricing, especially at the low end. None of the other workstation vendors has matched that—we're substantially cheaper than anyone else now. In fact I think people are selling graphics terminals that cost as much. So it's clear that we're just ahead in that space, and we've got essentially a whole factory that does nothing but build that particular model.

It's a very mature product.

How long has it been out?
January of '86. [laughs] That's *very* mature. Eighteen months is a long time. But it's a very simple product, it's very easy to build, it's very reliable, and it solves a lot of things you need to do. It can run all the software that doesn't require color, basically, that most people want to run.

And all your equipment is built with a high-speed network connection.
It's standard on all the machines. It's on the CPU board, as is the display.

Which changes most points of price comparison, because most vendors consider those options.
Most people have it as an option. But it turns out it's such a small number of chips, it's a nuisance to have it be an option.

In a sense, you can make yourself appear cheaper if you leave out enough stuff and define the system you're comparing as being stripped enough. I think in that sense PCs are virtually cheap but really expensive, because it's almost like you had to buy a car and the tires were optional. In a Mac [SE and II] the keyboard is optional—c'mon, give me a break. I mean, they have two keyboards, you're going to have to buy at least one. They could make the other one an incremental charge. But instead they make them both optional and it makes the price appear lower.

So what you're getting for your $4995 is a full system?
Everything.

And you don't have to add anything?
Either you're going to put it on an Ethernet, in which case you have to pick one of the two kinds of Ethernet cables to hook it to—there's thin Ethernet and there's thick Ethernet. And if you're going to run it without a network you'll have to pick a disk.

In general we don't include the Ethernet cabling hardware because, essentially, a lot of people like to buy it from 3Com or someone directly. Because we don't really add any value buying cables and reselling them. But that includes all the software licenses that people need.

That's the UNIX software bundled with the system?
Right, and the window system, and the little basic programming languages and tools.

It turns out that the box of documentation is actually a separate item, because when people order six to twelve of these, they really don't want twelve copies of the documentation. So you buy *n* workstations and *m* copies of the documentation, which typically is a much smaller number.

What advantages do Sun systems offer over PC or Macintosh systems?
Well, DOS and the Mac are really constrained by the fact that they have to go through retail. They have to be done it a way that fits. And the

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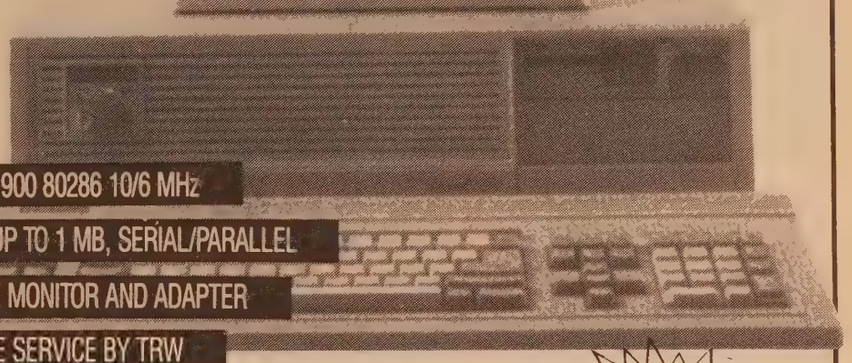

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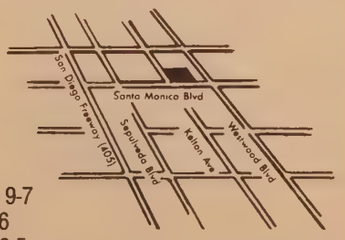

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problem with UNIX, the systems we sell, is that our energy hasn't been put on making things good for retail, but on solving particular problems.

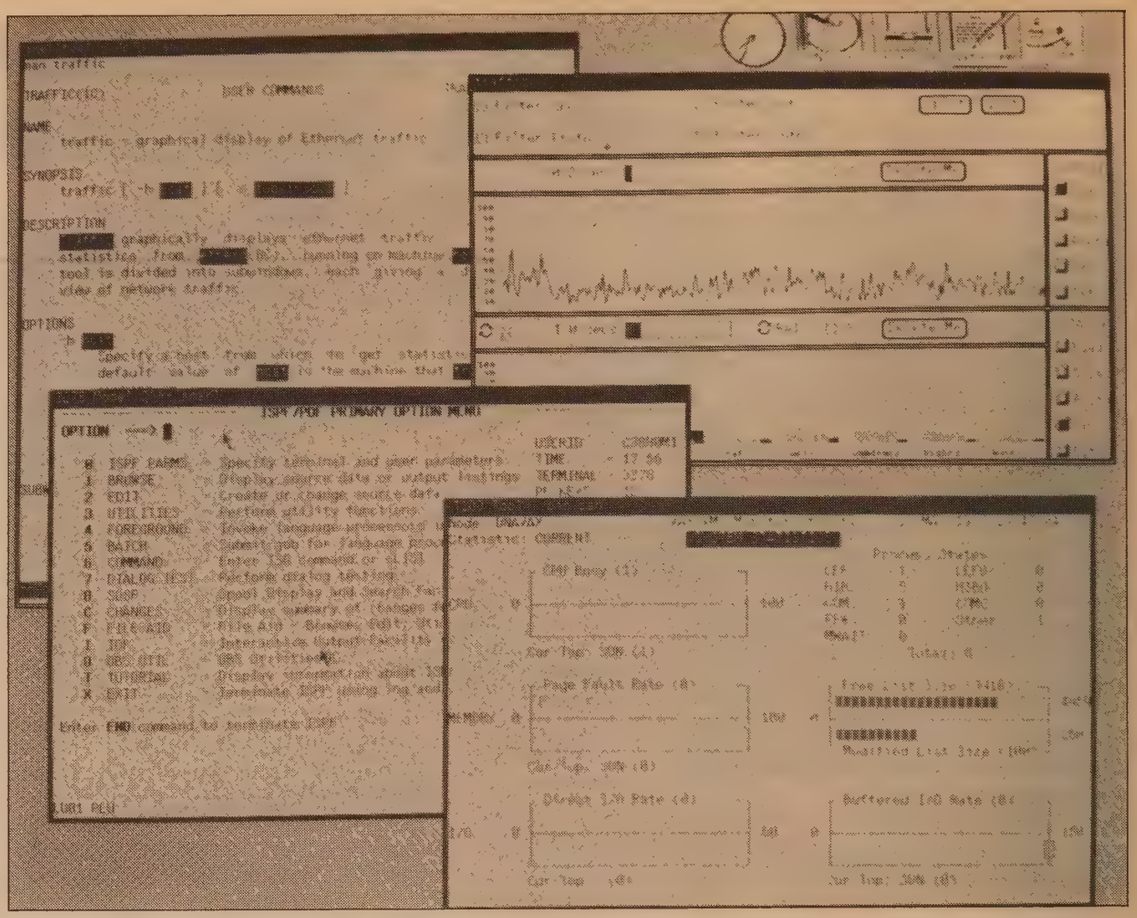
In a sense, our system's too complicated, because it's working so hard to solve problems; retail in a sense is too simple to solve the problems of engineering. What a Mac is, essentially, is a replacement for a typewriter. A Sun typically is not a replacement for a typewriter—the people who had them didn't have typewriters. They had pencils, and paper, and drafting tables and who knows what—telephones, tv screens, all sorts of different things that weren't typewriters.

Why would somebody with PCs or Macs already in place want to look at your products?
Is there different software, and the software solves different problems? A computer is a problem unless it solves a problem. These are computers and those are toys, in some sense. I mean, they're typewriters. PCs—if they don't run *Lotus*, they don't run *Excel*, or they don't run *Word*, what do they do? The game of baseball? I mean, what do people really do with them? There aren't really that many applications.

You place a lot of emphasis on the distinction between microcomputers and microprocessor-based computers. Could you clarify that?
The personal computer industry is, of course, very concerned with cost, and this concern with cost in the past has created a lot of problems in terms of limitations that the software has had to deal with, in particular 16-bit address spaces, segment address spaces, low quality displays and so forth.

The workstation industry has been using microprocessors to replace larger machines, basically as a cost *reduction*, but with performance and functionality more an issue rather than simply cost. I think we're going to continue to see microprocessors used to build very powerful machines, where we use micros because it's the easiest way to get that performance level, and the microcomputing industry is using microprocessors simply to provide a minimal level of performance to people who just want to have a box. So we see a new generation of machines coming based on RISC technology and other pipelined processors that will be very high performance and will largely replace existing powerful workstations and minicomputer-style machines—and those are really computers based on microprocessors, because that's the easiest way to do it, as opposed to microcomputers, like the Personal System or the Mac, where the microprocessor's performance isn't the real issue.

See, Apple, two or three years after the 68020's been available, is really not introducing it into their product line in any major way. The Mac SE introduced this year is still based on the 68000, even though the 68020's been out for over two years and would give them two to three times the performance at roughly the same price. Those are microcomputers; that's the attitude of the microcomputer industry. And that ultimately drives the applications, and it takes years for applications that use power to come around because people don't supply it. The installed base really drags them very slowly—they're scraping along on installed base.



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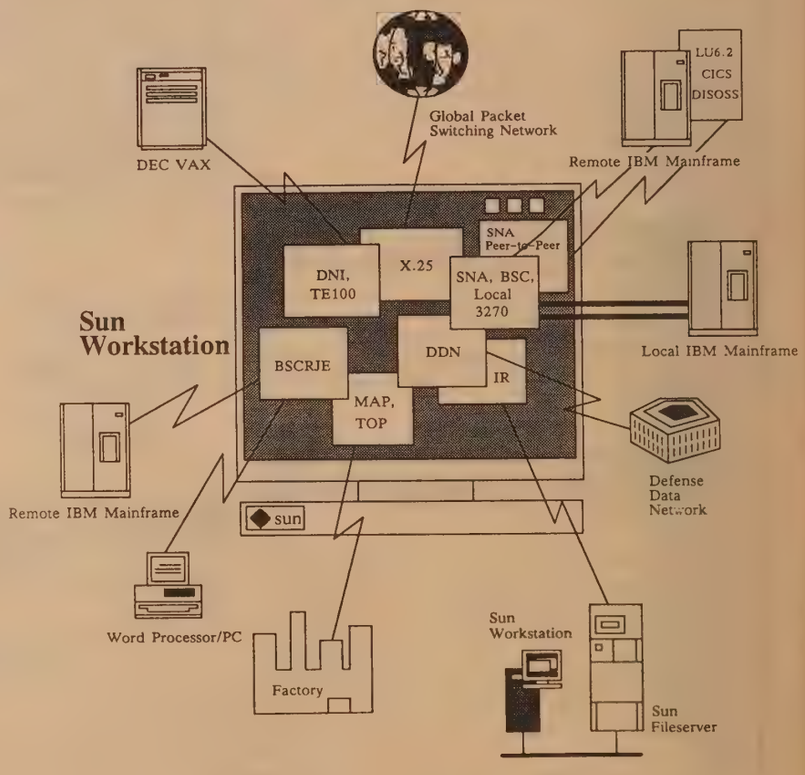

That being so, why would a PC or Mac-based office want to get Suns?
Well, it runs different software. It runs good CAD software, it's a much better environment for programming, there are better document preparation tools in all the areas. I think also they'd find that the Suns would network to the Macs very well, and in fact are much more capable of networking to other computers than the Macs or PCs are, in terms of connectivity to IBM or DEC or any of the other larger machines. The Sun can also act as a bridge between the PCs and the corporate data processing environment, essentially.

The 3/50's been out since January of '86. It must have had some predecessors.
Right, there was. It was called a 2/50—that was about one third the

IBM Computer

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IBM System / 2 model 30 8086 processor, 640K RAM, two 720K floppies, Parallel / serial ports	$1695.	$1220.
IBM System / 2 Model 30 8086 processor, 640K RAM, 1- 720K floppy, 1-20MB hard dr., Parallel, serial ports	$2295.	$1650.
IBM System / 2 Model 50 80286 processor, 1-1.44K floppy, 20MB hard dr. 1meg RAM, Parallel / serial ports	$3595.	$2690.
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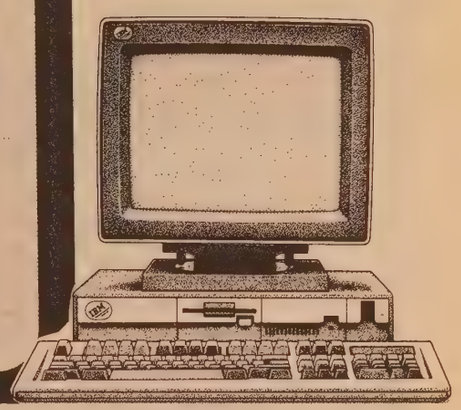

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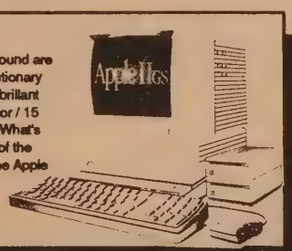

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performance and one half the memory, and it didn't have a disk controller built in, and cost $1000 more. So basically we gave you a disk controller, twice the memory, three times the performance, and reduced the price.

So it was kind of a surprising announcement, but that's been fairly typical, since we base prices on what things cost, and the technology's advancing—things that are better aren't necessarily more expensive. I think that trend will continue—performance is more a function of the design, in a lot of cases, than of the cost. And a good design is something you only pay for once.

With the 19″ screens and the mouse-driven user interface, the Sun gets identified in the public's mind as a particular kind of user interface. Has that always been around, or was there a time when Sun made computers that were basically character terminal driven?

No, we avoided that, because basically the business model, if you sell somebody one of these boxes with a bunch of terminals, the revenue capture is around $50,000. And we goal our sales force at over $3 million per salesperson, and they would never be able to make their quotas. There's a lot of people trying to serve that need, and we're not really set up to be a timesharing vendor.

People tend to use PCs as terminals, so if you have a mixture of PCs and workstations and some servers, we support that quite well.

Where was Sun with its product development at the time the Macintosh came out? I've always sort of thought of the Macintosh as a kind of miniature Sun.

Oh, the Mac was basically just the Lisa technology repackaged. They didn't really create very much technology. The Mac originally was like an 8080-something. In some sense the Mac II is just a Lisa, and the Mac SE is a repackaged Lisa.

Sun really had a Sun prototype—the Sun 0, if you want to call it that—at Stanford in '81. The UNIX environment that we run was largely complete in '79, '78.

I remember reviewing Lisa specs in '80 or '81. But that machine failed, I think, because of internal Apple politics which caused it to be priced high. It wasn't allowed to be competing with the Macintosh, so they priced it unreasonably high, which prevented it from ever getting anywhere—people laughed at a $10,000 machine, they didn't want to pay 10K for a PC.

Apple didn't have a distribution channel. So Sun was a Lisa, plus the philosophy of industry standards going through a direct channel. It continues to distinguish Sun from Apple—Apple's a consumer electronics retail company, Sun's a computer company, and I don't see those two things being the same any time soon, because computer companies solve different kinds of problems than, say, stereo stores.

Going back to the early days, what was behind the decision to make this a UNIX-based system?

Well, they needed software, and they hired me, so that made it inevitable.

But they really didn't have a choice—they needed a 32-bit system. See, UNIX has no competition, really. There's nothing else that's been available as a portable 32-bit system. It's the easiest way to win a competition—to have no competition, and there was nothing else, except for proprietary systems, which is what Apollo did, and what DEC and IBM had at the time.

We didn't believe we were solving any problems by—I could've set out to write a new operating system or something, but I was too lazy. We had other problems to solve. And there was a talent pool—we had people who knew how to do UNIX, so that made it worthwhile.

Historically it seems you've had an unusually open policy about working with third-party developers.

That's right, and it disturbed the analysts too.

Why did you decide to do that?

Because there was more leverage. Because, being small, you can't solve every problem. You need to use other people.

A typical problem that people have when they work with other people is that they're afraid that people will steal part of their revenue. It's sort of like being a little kid and wanting to eat *everything* and not sharing. But that's how you make friends, and friends are useful, in that business is really done on the basis of personal and business relationships that work well, as opposed to being sort of isolationist.

A typical problem that people have when they work with other people is that they're afraid that people will steal part of their revenue. It's sort of like being a little kid and wanting to eat everything and not sharing. But that's how you make friends, and friends are useful, in that business is really done on the basis of personal and business relationships that work well.

It's sort of a breath of fresh air. I mean, it just seemed like the right thing to do. It's sort of a cultural thing—we weren't interested in starting over. I guess most people, they start a company and do everything themselves from scratch. It just works less and less in a world that gets increasingly interdependent and complicated. We *can't* go off and invent our own protocols—we've got machines out there that we need to talk to have them. We've got to have FORTRAN, we can't go out and invent our own programming language, it's just not practical.

So the question then is, once you have that philosophy, what you want to do is develop a culture and a business strategy which work well in that environment. And that's a very different kind of the business strategy and culture you have than if you are going your own. So the people that are doing it the other way have a philosophical transition, a mindset transition to make, and it's very difficult. They need to go through corporate psychotherapy, and it's not clear that it works.

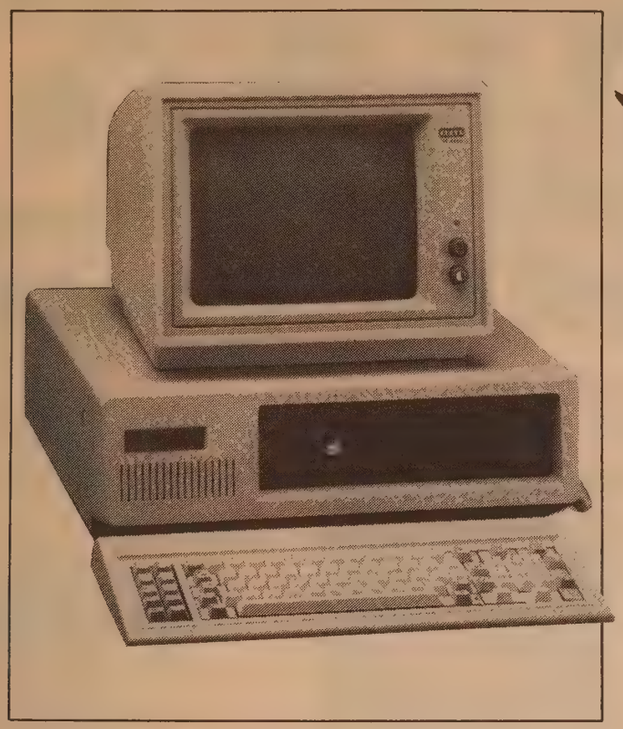
How has the belief in open systems worked out?

Well, we're the fastest growing company in the history of the business. It's a question of when do you hit the wall—is there continuing opportunity at the size we are now? We're the size where if we wanted to do more, we couldn't do it, without this strategy.

I guess that our belief is that in direct sales of computers, there's only going to be three standards. There's going to be IBM, DEC, and a UNIX-based standard, and we still have the chance to be the dominant company in that third standard. And the only way that environment is going to work is if a lot of people collectively sell the standard, because no company's large enough to define the whole standard.

So we want to be a major player. First of all, we want the UNIX open systems market to exist, and then we want to be a major player in it. So part of our philosophy was to help create that market, and part of it is to hope to find some understanding of how to become important in the market. I mean, if the world is defined by open systems and we understand open systems, we can probably find a way to gain whatever the open systems analogue of proprietary advantages are. There certainly are things you can do, even in an open environment, to cause people to be repeat customers—cultivating relationships, using technology in a more leveraged way, sales and service. Those are the sorts of things we have to focus on.

We just have to have the best technology, or fundamentally the equation doesn't work, because DEC and IBM are so large, and they have so many more people. Those are the real competitors, it's not Apollo, they never were the competitors, it was always DEC. I think that's why these people have trouble competing with us, because they were competing with us as if we were competing with them, and we really weren't. We always had a strategy of competing with DEC, so the other companies were always surprised at what we did, because it didn't make the most sense if they were the competitor. The financial analysts are beginning to understand this now. We're trying to be a computer company, not a microcomputer company. (Sun Microsystems, 2550 Garcia Avenue, Mountain View, CA 94043, 415/960-1300.) □



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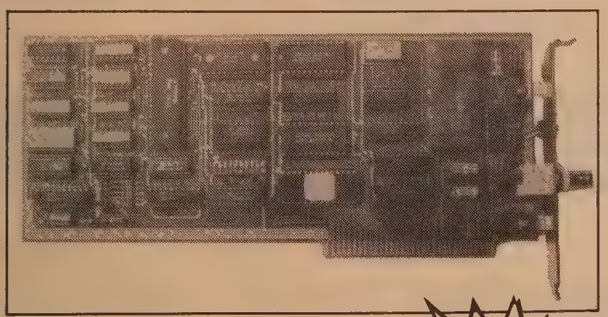

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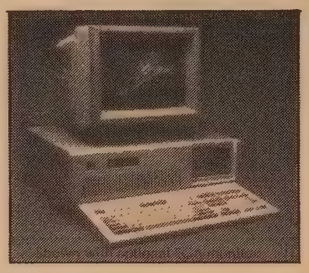

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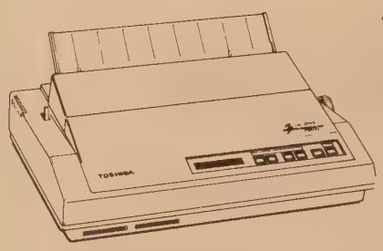

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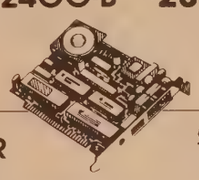

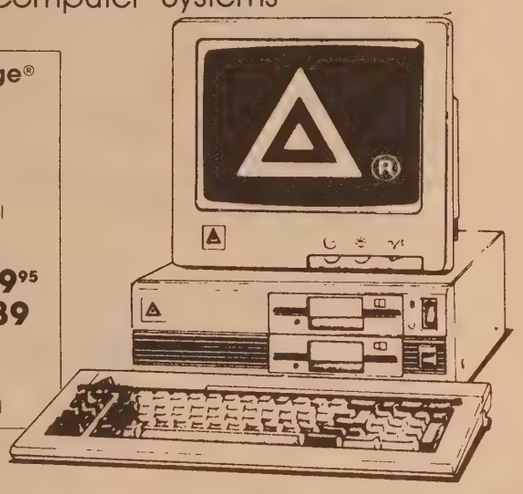

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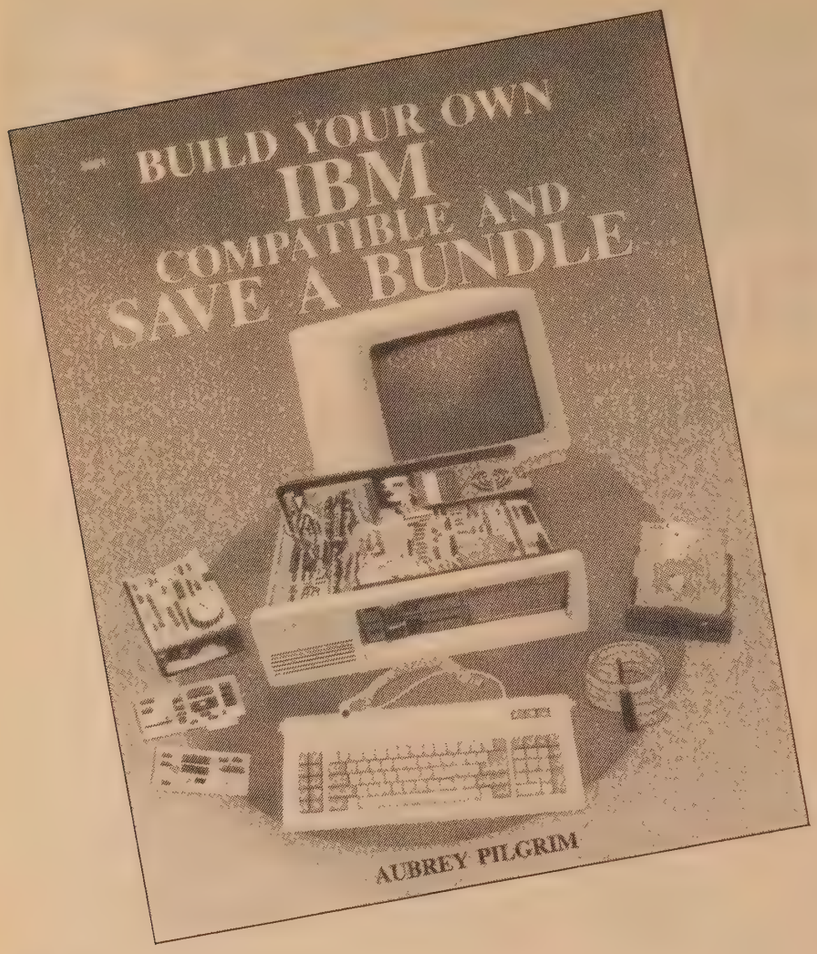

Special Book Excerpt

How To Upgrade An Old IBM Personal Computer

By Aubrey Pilgrim

There are thousands of genuine IBM computers out there that are obsolete. This includes the original PC, the PC-XT and the PC-AT. These computers may have been the latest state of the art when they were sold, but if they are more than a month old, then there are several goodies that they don't have. If they are more than a year old, they are practically antiques.

If you have one of these, you could put an ad in the paper and try to sell it, but you probably won't get much more than ten cents for each hard-earned dollar that you originally spent on it. You are much better off keeping it and upgrading it.

The automobile business brings out a new model every year. Computer technology evolves much quicker. There are new models and additions announced almost daily. If you want all the latest doodads and fancy fringes on your car, you only have to buy a new car once each year, but not so in the computer business. Every IBM personal computer that has been sold since early 1981 can be easily upgraded to perform as well as the newest one off the production line, and it can be done for much less than what a new computer would cost.

Original PC

IBM announced the original PC (for Personal Computer) an August 2, 1981. It was a historic moment. Whether you realize it or not, our way of life has been dramatically influenced and changed forever more because of this announcement and the computer that was introduced.

A lot of people criticize and take potshots at IBM, myself included. But you must give them credit for bringing some kind of standard out of the chaos that was reigning at the time. When IBM introduced the PC I, there must have been at least 100 different computer manufacturers. Each one of them had their own disk formats. Many of them had their own operating systems. Software had to be written to fit each format. But IBM, with its vast resources and reputation for quality, soon forced a de facto standard.

Since most of the computers being sold were IBM, most of the software was written for IBM. Soon several other computer manufacturers began making compatibles. This increased the base for software developers even more.

Third party manufacturers began making boards and other plug-ins and improvements for the IBM PC. It had an open architecture with five slots that allowed one to configure it in many different ways for specific applications.

Evolution of the PC, XT, and AT

The original PC I, introduced in August of 1981, came standard with 16K of RAM. It could be expanded up to 64K maximum. Its BIOS did not support the installation of a hard disk drive. It had five slots and a 62 watt power supply. It cost over $3000.

The PC-XT was introduced in March of 1983. The XT was for eX-tra Technology. It had eight slots and a hard disk drive. It came standard with 128K of RAM and could accept up to 256K on board. With 128K, one 360K floppy drive and a 10 MB hard disk drive, the cost was $4,995.

Soon after the introduction of the PC-XT, the PC II was announced. It was very similar to the PC I, except that it now came standard with 64K of RAM which was expandable up to 256K. It still had the five slots, but the BIOS now supported the installation of a hard disk. But it still had the 62 watt power supply, so the addition of a hard disk might have been more than the power supply could handle. The price started at about $3000. By the middle of 1984 the cost of the XT had dropped to about $4,300, and the PC II had dropped to $2,400.

The PC-AT was introduced in August of 1984. The AT is for Advanced Technology. It used the Intel 80286 Central Processing Unit (CPU) and was actually more powerful and more versatile than some minicomputers. With 512K of RAM, a 20 MB hard disk, a 1.2 MB floppy and a 360K floppy, the AT cost $5,795.

At the time of this writing, the PC II is down to about $2000. The XT is around $3000 and the AT has dropped to about $4900. The prices listed above do not include a monitor and driver card. An IBM monochrome monitor costs about $400 and the driver card, or Monochrome Graphics Adapter (MDA), about $185. The color monitor costs about $600 and the Color Graphics Adapter (CGA) costs about $160. The CGA can drive a monochrome or color monitor. IBM has also developed a high resolution monitor that costs $850, but in order to drive it, you have to buy an Enhanced Graphics Adapter (EGA) that costs about $1000.

Price Comparison

I am using an AT clone to write this. The enhanced IBM PC-AT comes with 512K of RAM. My clone has 1 MB. The IBM PC-AT has a 20 MB hard disk. My clone has a very fast 40 MB. The IBM PC-AT cost $4900, my clone cost me $1700. I added a NEC Multisync high resolution monitor and a compatible EGA for $800, for a total of $2500 for my AT clone. An equivalent AT configuration from IBM would have cost about $7000.

Upgrading Your IBM

If you happen to have one of the IBM PCs, you can easily and inexpensively upgrade it. The clone hardware is designed from the de facto IBM standard. Almost everything that works in the clone will work in the IBM and vice versa. IBM is very large and it often takes them quite a while to institute changes. The clones have taken advantage of this and they come out with new and improved designs almost daily.

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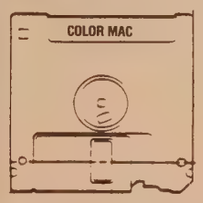

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Disk Drives

You can take out the full height floppy disk and replace it with two half heights, or a half height floppy and a half height 20 MB hard disk. The half height floppy will cost less than $100. The 20 MB hard disk will cost less than $400.

Monitors

You can buy a high resolution monitor for less than $500 and an EGA card to drive it for less than $300.

Keyboards

Your IBM keyboard is solidly built and has an excellent tactile feel to the keys, but the **Return** key is small, the same size of the other keys. The **Caps Lock** and the **Num Lock** keys do not indicate whether they are on or off. A new and improved keyboard, with LEDs for the **Caps Lock** and **Num Lock** keys, can replace the old keyboard for about $60. If you do a lot of typing, it will be well worth it.

Accelerator Boards

The IBM PC and XT operate at 4.77 MHz. The AT operates at 6 MHz. The clone XTs and ATs can operate up to 8 MHz. Some clone ATs are operating a 12 MHz. There are several boards and other hardware available that can make your IBM operate at a much faster speed. It is even possible to plug an accelerator board with an 80286 CPU into a PC or XT. You would then have almost all of the capability and speed of the best AT. It can cost from $200 up to $1000 to speed up your PC or XT. Even at $1000, it is a lot less than what an IBM PC-AT would cost.

Turbo Mother Boards

You can buy a clone turbo motherboard that is switchable from 4.77 MHz to 8 MHz. Take out your IBM motherboard and install the clone board. You could take the IBM BIOS and ROM from your IBM motherboard and install them in the clone. You would then be assured of 100% compatibility. You could also use the RAM from your IBM motherboard. You can buy a clone turbo motherboard for about $100.

Be very careful when removing and installing chips. They are fragile, and one broken pin ruins the whole chip. Use a chip extractor/inserter. Also, be sure to ground your extractor, because even a little static can ruin your irreplaceable chips. It might also be wise to check whether there are any laws that make this switch illegal. Finally, upgrading your IBM this way will void the warranty, if it is still in effect, so you may want to check on this before you start.

Summary

If you have an older IBM PC or PC-XT, don't give it away or throw it away. You can easily upgrade it to be as good as the very latest clone very inexpensively. If you don't tell anyone, no one will ever know that your system is not 100% IBM. □

If you have an older IBM PC or PC-XT, don't give it away or throw it away. You can easily upgrade it to be as good as the very latest clone very inexpensively. If you don't tell anyone, no one will ever know that your system is not 100% IBM.

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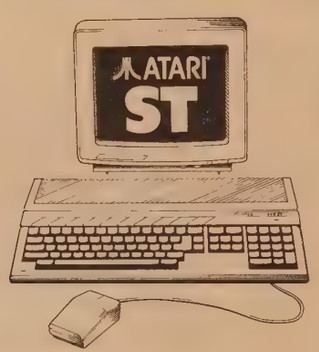

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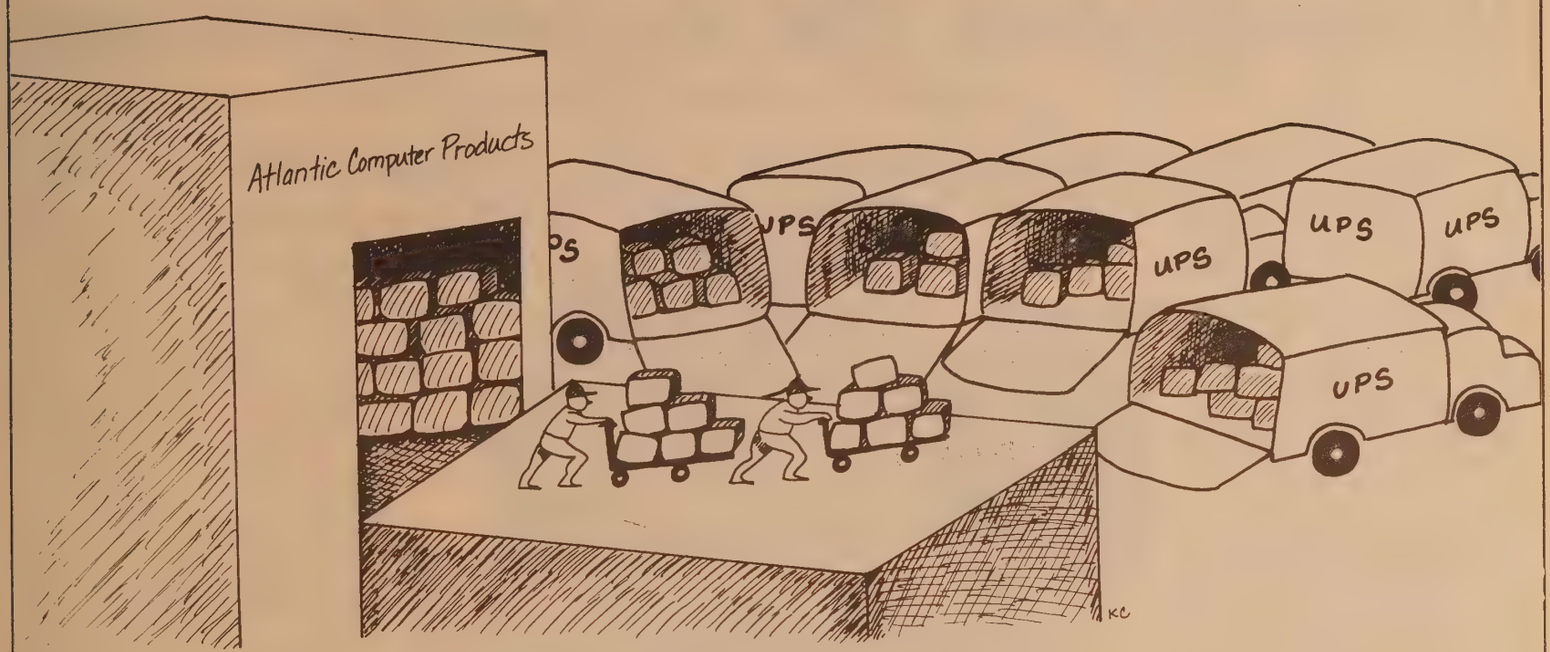

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Personal Computers Revolutionize The Recording Studio

By Mary Eisenhart and Jacqui Ford

As the widespread acceptance of MIDI and personal computers drastically changes the tools and options available to musicians, it's also sent shock waves through the recording industry—not just in the way recordings are made, but in the way a studio conducts its business as well.

Jim Gardiner produces recordings at Berkeley's Live Oak Studio, which offers both Macintosh and IBM-based rooms. On the one hand, he says, "MIDI's almost run 24-track studios out of the business. Once, you'd get down conventionally and write the song out, and then you'd find a studio and book time to record the song, hire players—but now everybody does it at home. The kid that normally would've come in to record is now doing it at home."

On the other hand, the technology also offers unprecedented flexibility. "The IBM and the Mac can do more than a 24-track recorder," says Gardiner. "It's the equivalent of doing the exact same thing you'd do on a recorder, except with the ability to do anything you want—take music, go back, forwards, upside down—all the things you can't do with even a 24-track recorder."

Chris Irwin, a partner in Manhattan-based Calliope Recording and Productions, a multimedia production facility whose work spans videos, commercials, and music, agrees. "The use of computers has opened up an incredible number of doors for us in terms of realizing our ideas musically and getting them out as product." Calliope currently has two Macintosh-based recording rooms, each with its own sound library, with one Mac interfaced with a 24-track tape recorder and the other with direct digital recording.

Computer-based recording technology offers a number of advantages over its predecessors. Perhaps most importantly, from the musician's standpoint, it's substantially reduced both the cost and the monotony of studio time. A little digital manipulation is often an attractive alternative to endless laborious takes of the same passage or re-recording the entire piece if you've decided to change something; says Irwin, "You can move around a bridge section of a song to a chorus, you can speed your tempo up or down, you can transpose your instruments, and you can have synthetic instruments or actual samples of real instruments play these parts. In one small room, with what's probably considered a minimum of gear, you can create entire symphony orchestras and compositions, as well as contemporary music."

PHOTO: MARY EISENHART

Live Oak's Jim Gardiner: "The IBM and the Mac can take music, go back, forwards, upside down—all the things you can't do with even a 24-track recorder."

Also, MIDI provides the option of leaving tape entirely out of the recording process, which not only facilitates editing but often improves sound quality as well—eliminate the tape and you've also eliminated its hiss. "I try to do as much as possible without using tape," says Gardiner. "If I played you something that didn't use tape, if it was just the keyboards, then you'd probably hear a lot more of the dynamics, because it would be noiseless and absolutely clear." There are, he adds, some sounds that still can't be sampled and recorded digitally as well as by analog methods, notably the sound of the human voice; however, most of these limitations are probably short-lived.

While technology is reducing the time musicians need to spend in the studio—clients, for instance, can also create music files using their home equipment, send them via modem or disk to the studio, and have them loaded into the studio's computer for further work before the meter starts running—Gardiner's noticing a trend among his clients to spend as much time there as they ever did—polishing, fine-tuning, putting in extra finishing touches. Both he and Irwin feel strongly that in order to stay competitive, studios will need to offer artists tools they can't get at home—more high-end keyboards, more sophisticated recorders, unique sound samples, and most of all the producer's expertise. As the business community has discovered that the best desktop publishing software in the world won't miraculously transform the user into a professional designer, so too musicians are discovering that better tools aren't themselves a substitute for experience and knowledge of what works.

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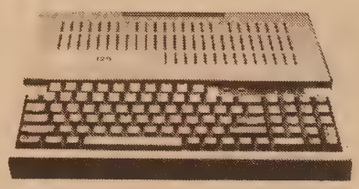

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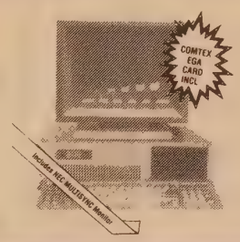

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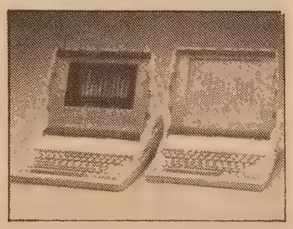

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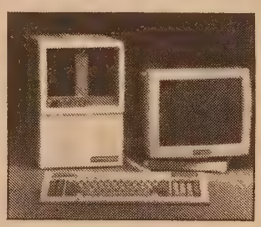

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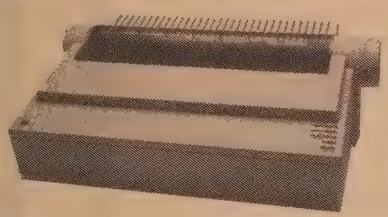

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Calliope's Chris Irwin: "The use of computers has opened up an incredible number of doors for us in terms of realizing our ideas musically and getting them out as product."

As MIDI and computers change the way music is actually made, a process Gardiner sees as going back to the first cave person who decided to see what happened if he drilled a few more holes in a flute, there are, as always, winners and losers. With easier-to-use equipment and more forgiving tools, technical prowess has become far less essential to producing a professional-quality piece of music, resulting in less studio work for session musicians. On the other hand, it's opened up a whole world to people with more ideas than technique. Says Irwin, "It's a very powerful tool. It's broken down a big barrier in terms of getting your ideas across. Drum machines and sequencers specifically have made it possible for people who are not skilled as musicians to make incredible tapes. An untrained person can take something that's just a concept or idea and turn it into actual commercial music. It's very difficult to manipulate analog tape in the same way."

Gardiner worries a little that all this technology may have the effect of putting a price tag on creativity, developing an audience that demands the latest in high-tech refinements. "It used to be that you could get three or four kids to rehearse in a garage, and you didn't need any money to do it. But now the kid in the garage won't be able to get his song as perfected."

Still, technology can enhance creativity, but so far it hasn't come up with a substitute. "The kid's not going to be able to compete," continues Gardiner, "unless he's got great songs. *That's* the bottom line. *That's* what everybody's looking for." (Live Oak Productions, 415/540-0177; Calliope Productions, 265 W. 37th St., New York, NY 10018, 212/704-9626.) □

OH, AND IT RUNS THE BUSINESS, TOO...

Once it's in the studio, the personal computer pays some unexpected dividends.

For one thing, according to Gardiner, his Mac and IBM have proved a far better investment than most of his dedicated recording equipment. "Microprocessor-based equipment is getting cheaper—you can get things for a few hundred now that would have cost thousands a few years ago—cheaper and better. The IBM and the Mac are the only equipment I've bought so far that hasn't become outdated. You can always update it with more memory and more software."

And whether, like Live Oak, the studio uses commercial software packages, or, like Calliope, uses a custom all-in-one system, personal computers offer unprecedented convenience in automating its entire operation—the same machine keeps the client files and schedules, does the billing and correspondence, and stores and refines music. Says Irwin, "We've developed a system whereby we do our writing and elementary arrangements of the tracks in our programming room and wind up with all of the timing information, as well as much of the sonic information, on small floppy disks. They're kept in files, and we have data sheets that accompany them. We schedule out our time in the studio to the public and to our production company, and we print the material that we put on disks onto tape. Sometimes we don't print it onto tape at all—we run it live through our console onto either an analog or a digital recorder.

"What the personal computer has done for us is interface a number of important things that we use in our daily activities in this business—a library of sounds, a mechanism for recording in a way that's very accessible and easy in terms of the editing process. Our personal computer, in this case, has bascially doubled the output of our studio—it's a tape recorder and a library for sounds, built into one machine, depending on what software we use.

"We're in the process of finishing off the system that's based on a central brain that supplies all of the sound power, sequencing power, business files, everything. It's pretty exciting to think in terms of there being one central intelligence behind the business."

—*Mary Eisenhart and Jacqui Ford*

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EGA
The Bewildered User's Guide

By Ed Kahn

The era of color displays is now upon us. Despite the lack of widespread use of color printers, computer users are increasingly turning to color monitors as an aid to working efficiently. In the last couple of years, since IBM's introduction of the EGA (Enhanced Graphics Adapter) standard, both software and hardware have been developed increasingly with color display in mind.

In the days before EGA, color was available, but the extra cost involved in buying a color monitor hardly seemed worth it for most users whose primary task was working with text. The display was of such poor quality that we could reasonably assume that users of the standard color display on an IBM or clone either did little work with text or soon found themselves going blind.

Monochrome display did all you needed for the creation of text. But with the introduction of EGA, the computer world began to move inexorably toward color displays. Initially, it was much too expensive for most computer users to switch to EGA unless they had a compelling need for high definition color display. There were many costs: the initial expense of a new EGA board—over $700 in the early days; the cost of a new monitor designed to accommodate the output of the EGA board, and finally software that could take advantage of the higher resolution made possible by the new board and monitor. Much of the older software was incompatible with the new higher definition output.

In time, however, the inevitable lowering of cost, standardization of software, and more sophisticated technology have begun to establish EGA as a viable standard. For the first time, color displays of text offer a resolution just as clear as the old monochrome displays. And new software is finding more ways to use color so that working at a monitor is easier and more efficient.

Despite the appeal of EGA, the number of products available and the need for the whole computer system to be integrated make it into a jungle in which you can easily get lost. It is my purpose to offer some non-technical guidelines to help you enter the rewarding but confusing world of color display. There are three elements in the color equation: monitor, graphics adapter board, and software. If the elements are incorrectly matched, the equation doesn't balance.

MONITORS

There is a wide range of choices in monitors. The least expensive option is a standard EGA monitor, available for somewhere in the neighborhood of $450. This monitor will display the output from an EGA board, but will not accommodate any other output. It is because of this limitation that some users continue to use their monochrome monitor as a second monitor with their system—provided either that they have a video board that will deliver a signal in more than one mode or they leave their old board in the computer. This is a cumbersome arrangement requiring a lot of desk space, but it insures that all of the software that you have been using will continue to work. Today, with new boards and multiple signal monitors, it is seldom necessary to use more than one monitor.

A more expensive option, but perhaps cheaper in the long run, is one of the displays that will work with a wide variety of video outputs. The pioneer in this field was the NEC Multisync monitor, a 13″ color monitor which claims the ability to accept output ranging from an older color board all the way up to a Professional Graphics Adapter (PGA), which is still so expensive that its use is pretty much limited to CAD/CAM applications.

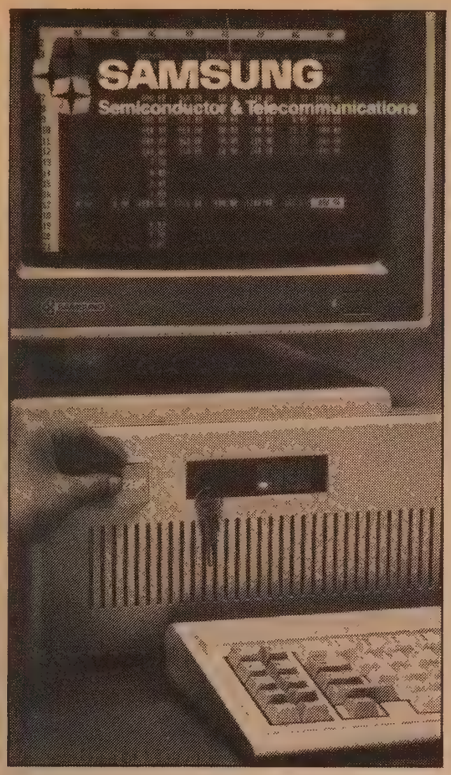
Although the monitor is expensive, it has two advantages. First, it is capable of accepting output from a wide range of graphics adapter boards. Second, it is flexible enough to have a life even if a newer graphics standard takes the place of EGA. A major limitation of the NEC monitor is its inability to handle output from a Hercules monochrome board. It can, however, work with a standard IBM monochrome board because this standard is compatible with EGA.

The Sony Multiscan monitor works with virtually any graphics board currently on the market and has the advantage of a smaller dot pitch not offered by the competition.

In the wake of NEC's success, several other versatile monitors were introduced. Thomson, Sony, and other manufacturers soon offered models that would accept output from a wider variety of graphics adapter boards than the NEC. Some of these newer versatile monitors would also work with Hercules output.

Of these monitors, the Sony Multiscan (CPD-1302) is my favorite. Not only will it work with virtually any graphics board currently on the market (and probably newer boards yet to be introduced), but it has the significant advantage of a smaller dot pitch that none of the competition offers. Dot pitch is the measure of how wide the line of the image is. In working with text, I find the .31mm dot pitch which the NEC and most standard EGA monitors use a bit too fat for my taste. Monitors that use this size letter simply are not as clear as a good monochrome display. But the Sony, with a .26mm dot pitch, offers every bit as clear an image as a good monochrome monitor.

So, finally, there is virtually no tradeoff in using a color monitor for the creation of text. And there are a number of advantages. In word processors, error messages can have a different color, menus can be composed of different colors to lead you quickly through procedures, and highlighted words in spelling checkers can take advantage of the range of colors. The only disadvantage I have found is that both underline and bold are shown on screen as colors rather than as the attributes



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themselves, so if you choose to both underline and bold a word, it may not be properly reflected in the display.

The advantages of using a color monitor in the creation of spreadsheets and databases are more obvious. Negative numbers can have a different color, borders can be easily distinguished, and column headings are easily recognized.

GRAPHICS ADAPTER BOARDS

The second component in the EGA equation is the graphics adapter board. Although the original IBM EGA board worked only with an EGA monitor, clone boards that could be set to utilize numerous graphics standards ranging all the way from monochrome and Hercules to standard color and EGA soon came to market. These boards offered the advantage of greater flexibility—especially if you used two monitors—and were usually less expensive than the Big Blue board. These generic boards are usually available for $200–300.

The next step in the evolution of color boards was the introduction of auto-switch boards pioneered by AST, Paradise, and Vega. These boards are available for around $300-400. They work with any software, and they're capable of knowing which software you're using and automatically switching to the correct settings. The advantage of these boards is enormous, especially if you frequently switch between applications that utilize different graphics standards. Memory resident programs that call for graphics standards other than the primary program's also work smoothly with these nifty boards. Although the auto-switch cards will accommodate any software, you are still limited by the monitor itself. The boards, however, can be set to work with any of the monitors. If you set the board to work with a monochrome monitor, it will automatically select standard monochrome or Hercules output, depending on the software. But if you then run EGA software, it will not display. These boards are especially suited to the multiple signal monitors as, with the exception of the NEC Multisync, they really can accommodate all software configured for any standard.

A final category of graphics adapter board has now come on the market. These boards boast that they will run any software on any monitor. Of course, it is not possible to create more definition than a monitor can support, but these boards make it possible to use any software that you already have and also to purchase new software that has been designed for use with EGA monitors.

The first of these boards that we examined is Genoa's Super EGA. This board is specifically designed to run on a multisync monitor. The benefit is that you can run any software with a multiscan monitor. It is necessary, however, to use the software provided to switch between modes. If you have an application written to the Hercules standard, you must go to the software menu provided and chose the Hercules mode. After that, the application will run perfectly.

ATI Technology's Small Wonder EGA board will run any software on any monitor. The board is also capable of automatically determining which standard the software is written to and configuring itself accordingly.

The advantage this board offers is that you don't need to have two monitors. The selection of modes is easily done through the software provided. The Genoa board is a perfect match for the versatile multisynchronous monitors that work with any of the graphics boards on the market. If you switch to a monochrome mode, the multiple signal monitor will respond as if it were a monochrome monitor and provide all of the definition and detail that the appropriate monitor offers. If the next application is written for EGA, simply switch through the software to that standard and you're back in business. This board-monitor combination provides a match which will run any software you may have.

Although this board lacks the convenience of auto-switching, it has several enhancements. Normal EGA resolution is 640 x 400. The Genoa board permits you to increase this resolution for certain applications. Users of *AutoCAD, GEM,* and *Windows* can increase the resolution to 640×480 by following the installation instructions that come with the Super EGA. *Lotus* users can increase the display from the conventional 80 column by 25 row to 132 column by either 25, 29, 32, or 43 rows. This is also accomplished by following the installation instructions provided. If you have use for these applications, this board may well be your choice. However, keep in mind that it lacks the ability to auto-switch between the different standards.

My favorite board is ATI Technologies' Small Wonder. This board claims to run any software on any monitor. In addition, the board is capable of automatically determining which standard the software is written to and configuring itself accordingly. By far, this is the most versatile of the boards.

In simple terms, the advantage of this board is that it will run any software on any monitor. Got that? It means that if you have an old monochrome monitor, you can now run the newest EGA software. Obviously you will not get a color output, but your software will run with as much definition as the monitor can offer.

The board will work with monitors supporting any of the IBM graphics modes. Not only that, it will also enhance the display in some cases. For instance, if you are running a CGA program on an EGA monitor, it will convert the 8×8 pixel formation text into the higher density 8×14 output of EGA. And because of the board's ability to automatically switch between software standards, it is possible to use combinations of programs. When I first converted to EGA, I found that I was no longer able to run my version of *Sidekick,* which was not set up for EGA. When I would call up *Sidekick* in the middle of an application, the screen would go blank because *Sidekick* was set up only for CGA. When I installed the Genoa board, *Sidekick* would run, but only if I used my word processor in a CGA mode. With the Small Wonder, however, *Sidekick* works perfectly, and, although it is an old CGA version of the software, the display has the same high definition as my EGA word-processing software because of the board's automatic translation to higher definition.

If you have an old CGA monitor, the ATI Small Wonder will interlace EGA output so that, although the output will not be as clear as that offered by an EGA monitor, it will have a good deal better definition than a standard CGA output, because the interlaced output doubles the scan to fill in the blank spaces in the CGA output.

The Small Wonder also offers the 132 column option for *Lotus, Symphony* and *WordStar* users. While the installation of this feature is straightforward enough for *Lotus* and *Symphony,* using it with *WordStar* requires a patch, and I suspect it is not as easily installed in *WordStar*'s newest version. However, the manufacturers of all these boards are constantly updating and changing the product to remain competitive. Since I received my version of this board, the company has issued new documentation and made several changes in the product.

For the user buying a new system, it's clear that if you want a color display, you should move directly to a system that supports the EGA standard. The choice then becomes whether to purchase a multisynchronous monitor or a less expensive EGA unit. Multiscan monitors are capable of considerably higher resolution than is demanded by the EGA standard. In terms of the display, there is little advantage unless you utilize some of the features offered by boards like Genoa's Super EGA. If you do not need that resolution, its presence is merely a hedge against your future needs or whatever standards the future may bring.

After you've decided which monitor suits you best, you must still choose a graphics adapter card. In practical terms, there is little difference between one of the many auto-switch graphics boards. The ATI Small Wonder, however, has the advantage of offering higher resolution on older CGA software displayed on an EGA or multiscan monitor plus the ability to display *Lotus* spreadsheets in 132 column mode.

For the buyer who is upgrading his system, there is little question in my mind that the best buy in cards is the Small Wonder, because it does not require you to change your monitor at the same time. You can put in this card and run all of your software—both old and new—and when you are able to upgrade your monitor the card will still work. In the meantime, you will have removed the limitation of being tied to a single graphics standard. □

Resources:

EGA Wonder $399
ATI Technologies, Inc.
3761 Victoria Park Ave.
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(416)756-0711

Super EGA $499
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PERSPECTIVE

IBM Graphics The Right Way

By Birrell Walsh

Perspective, by Three D Graphics, is a rare package that not only presents business and scientific data with flair and drama, it lets you have fun in the process. It makes absolutely elegant graphs and turns opaque tables of numbers into understandable, clear presentations. It is a delight to work with—I played with it for hours.

When this three-dimensional graphing program loads, the first thing you see is a sample graph. It seems fairly fancy, and it is, but *Perspective* is so well constructed that you will be designing similar graphs before an hour is past. It has the friendliest interface I've seen in an IBM program.

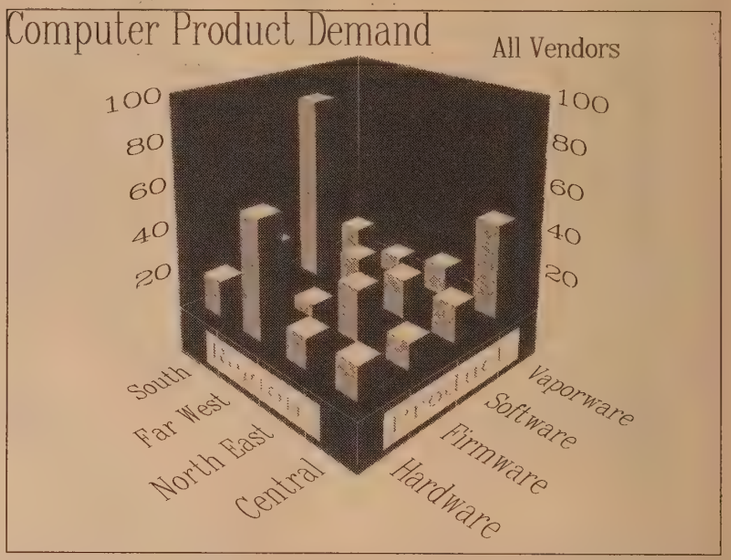
Perspective gives you 32 different pre-made three-dimensional graphs to choose from. Each of those can be displayed in 16 different "viewing angles"—from above, sides, distorted angles, and so forth. That makes 512 ways of displaying the same information in three dimensions. Then each of those 512 views can have the graph and the parts of the background individually painted with any of 178 different patterns.

As the Macintosh is a mouse machine, so the IBM is a keyboard machine. I never really thought a keyboard could operate a graphics program, but *Perspective* has changed my thinking. When you set up the program, it asks you whether your function keys are vertical, along the side of the keyboard, or horizontal and along the top of the keyboard. When the program operates, you find that you have a graphic screen with images of your function keys—in the same position as on your keyboard. The menus on *Perspective* are all graphic. The authors of the program allow you to change the graphs, the viewing angle, the patterns with which the background and foreground are painted, and all these choices are made from the keyboard. When the choice is continuous, as in the rotation and translation of graphs, you can choose between stepped jumps, controlled by the arrow keys, and continuous motion, which you stop with a key when the graph is where you want it.

PICTURES WORTH A THOUSAND NUMBERS

I tried out *Perspective* on a set of quite imaginary data that show dollars spent on different products, by region. The purchasers spend it on software, ROM and CD-ROM (firmware) or hardware. Some of them don't buy now: they decide to buy just as soon as Operating System/2 actually comes out. They have decided on vaporware, and the money goes into the bank until the vaporware precipitates.

The data make a table of sixteen entries—four categories by four regions.



1. OVERVIEW. An unadorned three-dimensional chart that looks at all the available data. Notice the three peaks: West likes hardware, South likes software, and Central likes vaporware.

Computer Product Demand
All Vendors
Millions of Dollars

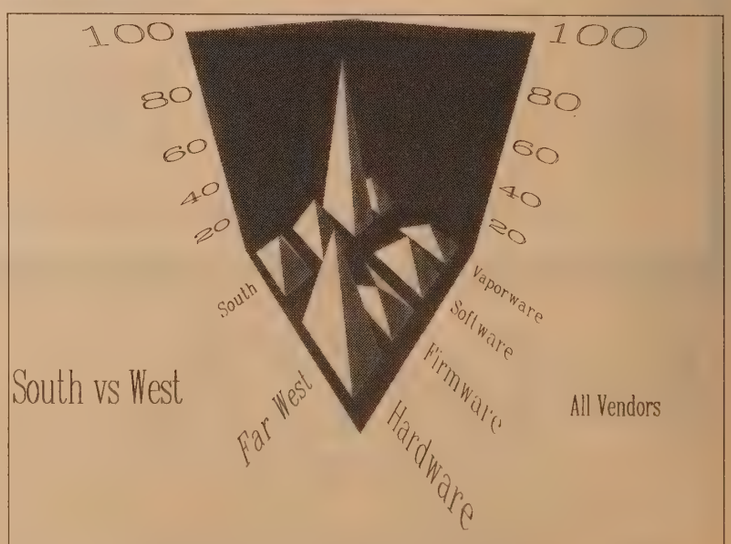
	Hardware	Firmware	Software	Vaporware
South	17.00	25.00	88.00	15.00
Far West	55.00	6.00	18.00	9.00
North East	14.00	24.00	18.00	14.00
Central	15.00	12.00	17.00	44.00

I never really thought a keyboard could operate a graphics program, but Perspective has changed my thinking.

Not very interesting, eh? In less than one hour I made four graphs to dramatize the data, and still had time to make two other graphs in the same hour.

Figure One staidly shows all the data. There are 32 choices for "risers"—the part of the graph that shows the actual data. In this graph I used rising square bars, which let you see most of the data at once. Because some of the data hide behind others, you need to view the graph from a fairly high angle. *Perspective* provides sixteen pre-made viewing angles, among which you can choose with a keystroke. You choose them from a menu which actually shows all the views, and select by moving with the cursor controls to the view you like and hitting return.

Figure Two compares demand in South and West, highlighting the South's interest in software, and the



2. SOUTH VS. WEST. Comparing South and West, highlighting the South's interest in software, and the West's interest in hardware. Other sales types are made insignificant. The chart is on an inverted background.

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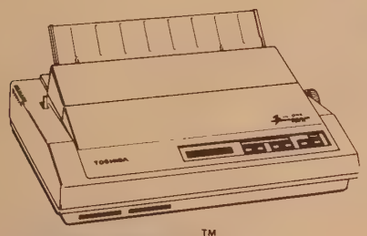

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West's interest in hardware. Other sales types are made insignificant. This chart is on an inverted background.

Figure Three graphs only the data for vaporware. It shows that the central region has a particular fondness for not-yet-released products. To highlight this finding, I used a viewpoint that distorts in the same way that a fisheye lens does. It makes the "Central Region" figures seem to leap off the screen at the viewer.

Data for graphs is kept in *Perspective*'s data table, where it can be edited and excerpted. Data may be imported from *Lotus 1A* and *Lotus 2*, ASCII, SYLK and DIF file formats. Almost any program, database, spreadsheet or application can create at least one of these formats.

The data-manager is the only text-based section of *Perspective*. If you have a cranky Hercules-clone monochrome board, as I do, it is a good point from which to jump into RAM-resident text programs like *Sidekick* or *PC Outline*.

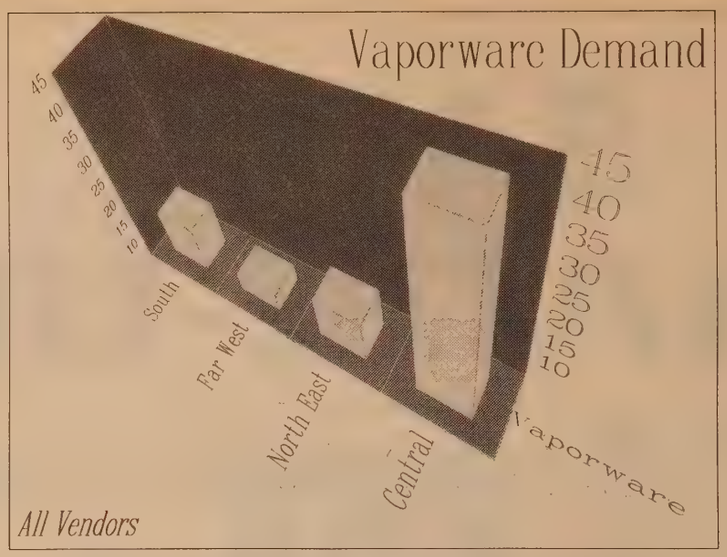
CHOICES, CHOICES, CHOICES

Perspective is a graphic "what-if" program. There are so many choices available to a user of *Perspective* that you can do what an artist can do: experiment over the range from hideous to beautiful. You have, for instance, over 175 patterns with which to paint the graph or the "cube" in which it is shown. You can make speckled graphs and spotted graphs, camouflage graphs, striped graphs. You can paint the cube, or make it invisible. The cube can have grid lines on it—horizontal, vertical or both. Not shown here are some terrible graphs I made during the hour I spent building the graphs you do see.

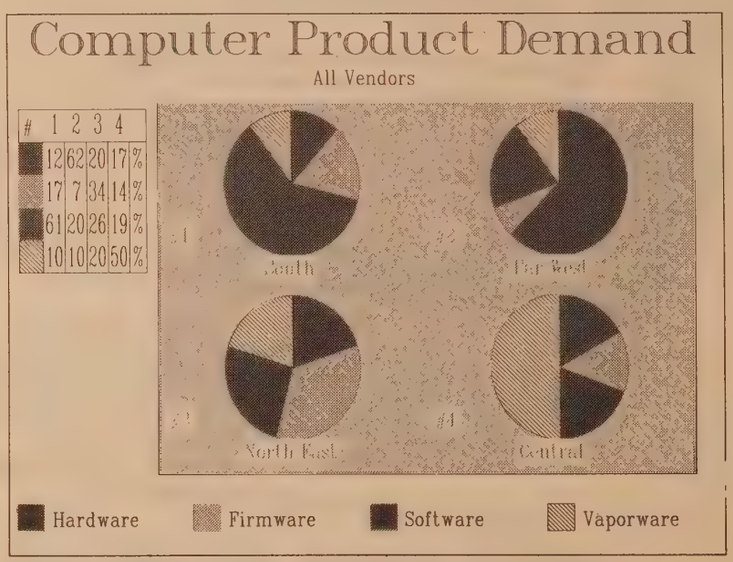
What's the use of having "too many choices", you ask? It lets you explore ways to show your data, to find out what works and what doesn't.

One set of sub-menus controls point of view. It lets you move the graph in three dimensions. On the screen *Perspective* presents three axes that represent the three axes of the cube. With the cursor-control keys, you can move the box left and right, up and down, toward you and away. You can rotate it along any axis. You can create the "fish-eye distortion" which is available in some of the pre-made viewpoints, to emphasize one part of the graph. You can even turn the graph on its side or upside down.

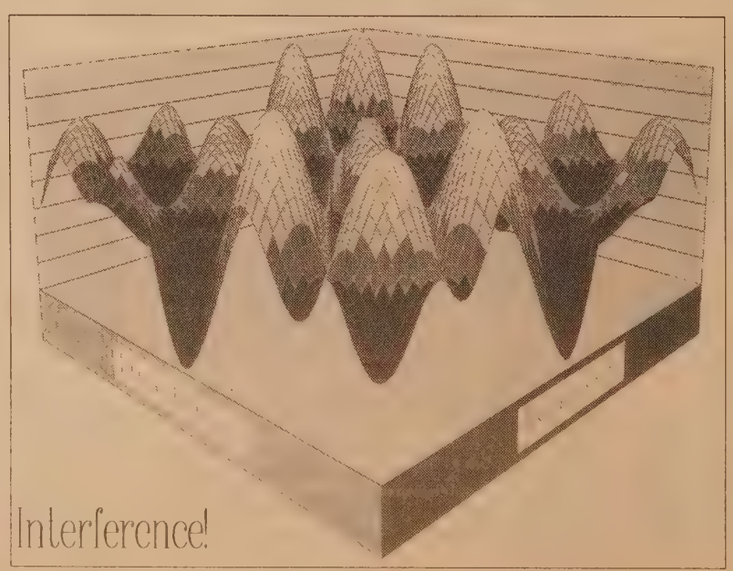
If you prefer to present your information in one of the traditional two-dimensional charts, *Perspective* provides 15 different types. There are all the classics: pie chart, bar charts, stacked bars, x-y charts. There are also specialized graphs. One chart uses different patterns to indicate different densities on an x-y chart. The result looks like a bacterial culture on a petri dish, and is excellent for presenting population densities. Another has two parallel axes. Points for the same row of data are connected from one axis to the other. You can use this graph to show before and after data, recording winners and losers in some change.



3. VAPORWARE. Vaporware demand in each of the four regions. These are the people who are waiting to get your product when it finally comes out—the fans of OS/2, aka ADOS, nee DOS 5.0, for instance.



4. REGIONAL PERCENTAGES. It shows, for each region, how the regional dollars are divided up. Each region has its own pie, and each of those shows the percentage of the computer dollar that goes into hardware, firmware, software and vaporware.



5. SCIENTIFIC. A graph of interference patterns. Data for this 60 x 64 mapping of interfering waves were generated and saved in ASCII format by a Turbo Pascal program.

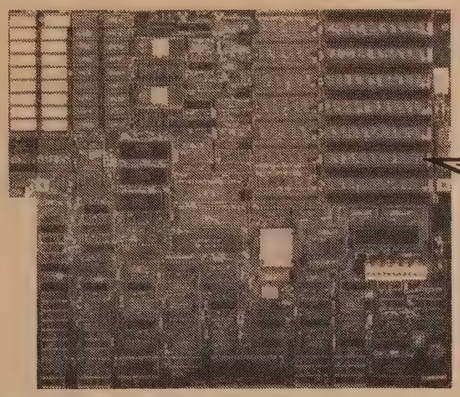
Perspective makes the finest graphs I've seen in any program for any machine below the "dedicated workstation" range. For the business user, this is its selling point. It also shows how future programs can use the IBM keyboard for a graphic/menu interface that will rival the Macintosh interface without copying it.

Perspective can make multiple pie charts on the same plane. I used it in Figure Four to provide a different view of our mythical computer-dollar expenditures. You can see that each pie shows percentages for a different row—percentages which *Perspective* calculates for you and displays on one side of the chart. All the patterns available to paint parts of the three-dimensional chart are also available to paint regions of the two-dimensional charts.

Many business programs provide at least minimal graphics, but scientists often don't get similar capabilities from the applications they use. *Perspective* makes superb scientific data displays from data tables produced by observation or by mathematical programs. The data table for Figure Five was produced by a *Turbo Pascal* program that simulated the interference patterns of two sine waves. It is possible to show the results in any of *Perspective*'s formats, but the classic is the continuous surface used in Figure Five. Many of the two-dimensional graphs are particularly appropriate for scientific use as well. The prepackaged graphic system in *Perspective* frees the scientist from having to develop bit-mapped graphics anew for each application.

In fact, *Perspective*'s many custom options will even let you make a logo

BRAINS *And Beauty*



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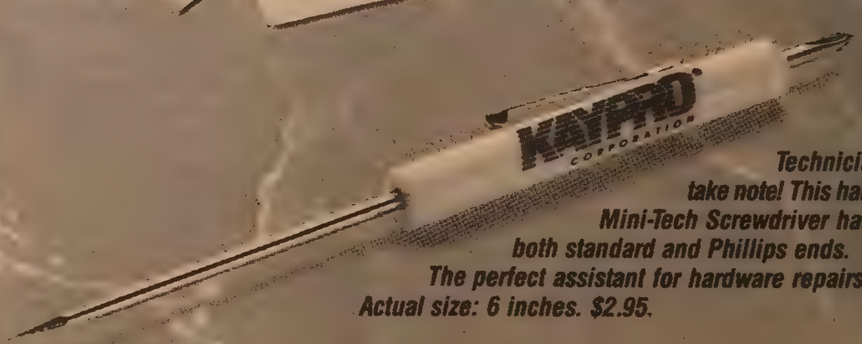

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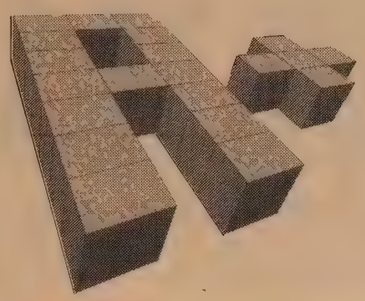

6. DESIGN & SYMBOLS. You can use Perspective to make 3-D graphics that don't seem to be graphs. This symbol has a data table in which the blocks in the "A" and the "+" are 1's, while the other spaces are blank. The cube's rear walls and floor were erased. Result—a floating letter.

out of a graph. In Figure Six you see an "A+" logo. The table behind this logo was a pattern of 1's and 0's that make up the "A" and the "+". From *Perspective's* 32 three-dimensional graphs, I chose one that made its graph out of floating boxes. To make the boxes touch, I adjusted the ratio of box-size to the grid square to 1:1. Another menu allowed me to eliminate the cube by setting its color to that of the background. Finally, I shaded the visible faces of the boxes with another menu. The result was a three-dimensional logo made in ten minutes. The data for it use only a 7×6 cell area in the 64×64 cell data table. You can fit 192 characters of this size into the data table, far more than you can read comfortably.

Perspective has two printing options. You can print a screen dump, which produces results identical to what you see on the screen. One screen pixel produces one dot on the printed chart. The screen dump is the only choice for two-dimensional graphs.

For three-dimensional charts you can use the "superprint" facility. It recalculates the picture for you in the finest resolution available on your printer. You can get the 300-dots-per-inch resolution of a laser printer even though the resolution you see on the screen is much less.

CONCLUSIONS

My only complaints about this exceptional program are the amount of memory it takes (512K), and the fact that it is currently available only in monochrome. The large memory requirement leaves room only for medium-sized co-resident programs. The monochrome screen does not bother me, reviewing this program on a monochrome AT, but it would distress those who have invested in an EGA card and monitor.

Perspective serves its user in two ways. It makes the finest graphs I've seen in any program for any machine below the "dedicated workstation" range. For the business user, this is its selling point.

It also shows how future programs can use the IBM keyboard for a graphic/menu interface that will rival the Macintosh interface without copying it.

Three D Graphics has prepared a color version of the program, but so far it is available only in a version sold by Boeing as *Boeing Graph*. Another version is bundled with *Enable* (an integrated program from The Software Group), and being featured in a national advertising campaign. In choosing to bundle *Perspective* with their products, these publishers are acknowledging that *Perspective* has changed the rules in the graphics game. There is nothing on the market like it. □

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Resources:

Three D Graphics $295
860 Via de la Paz
Pacific Palisades CA 90272
(213) 459-8525

Requires:
- IBM Compatible Computing Machine
- 512K RAM
- Hercules or EGA Graphics adapter

A. Requirements:

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VP-PLANNER

More Than A 1-2-3 Clone

By Woody Liswood

Considering the mud-slinging and fast-gun lawsuits over look-and-feel issues in the spreadsheet arena, commenting about the similarities and differences between *Lotus 1-2-3* and *VP-Planner* might be as dangerous as taking sides between the Hatfields and the McCoys. On the other hand, for over a year now I have recommended *VP-Planner* to my clients, because for $110 you get an unprotected spreadsheet which does everything that *Lotus* does.

VP-Planner advertises itself as a clone of *Lotus 1-2-3* that does more than the original product. Lotus says that *VP-Planner* is a direct rip-off and is suing Paperback Software. Software Garden says that *1-2-3* is a direct rip-off of *VisiCalc* and is suing Lotus.

No one argues about *SuperCalc* and *Multiplan*, but they both look like spreadsheets to me. *SuperCalc 4* will even read *1-2-3* files. *Silk*, brand new in the market, reads and writes *1-2-3* files but describes itself as the next generation. *Twin*, which was also sued by Lotus, just says that it has a *Lotus* clone.

Then there is *20/20* which runs on PCs, minis and mainframes, but no one pays much attention to it. Now, isn't that clear?

SPREADSHEETS— 1-2-3 VS. VP-PLANNER

So what about *VP-Planner*, the subject of this article? It reads and writes *Lotus 1-2-3* files and can use Lotus macros. Therefore, one might say, at this level *VP-Planner* and *Lotus* are identical, whence comes the term clone. *VP-Planner*, however, also has what it calls a multidimensional data base (more about this later on), which makes it significantly different from *Lotus*.

The spreadsheet portion of *VP-Planner* does not look quite like *Lotus*. The menus are displayed and invoked at the bottom of the screen rather than the top. Does that make a difference? Not in my experience. The menu items, although identical to *Lotus 1-2-3*, are preceded by a number which indicates the function key which can be pressed to invoke that item. That is different from *Lotus*' current version. There are also responses available within the menu structure which give *VP-Planner* significantly more control and flexibility in determining how the program interacts with the operating system and with the printer.

There are even more differences between *Lotus 1-2-3*, Release 2 and *VP-Planner*. Release 2 added features which were not in the original version of *Lotus*, and Paperback's stated philosophy with *VP-Planner* is to maintain compatibility with the 1A version of *Lotus*. *VP-Planner* also uses a sparse memory matrix, which allows a much larger spreadsheet in a given amount of memory than does *Lotus*.

In my opinion, much of *VP-Planner*'s success came from Lotus' arrogance in pricing. Also, many of the new features in Release 2 were so rarely used that corporate buyers of spreadsheet software felt that unprotected cheap software which was identical to or better than the original stuff made better economic sense. So how compatible is it?

How compatible is compatible? I have a variety of spreadsheets which are macro bound. All of these have made the transition from *Lotus* to *VP-Planner*. In fact, all of the spreadsheets which I have (some of which date to *VisiCalc* days on an Apple II) ran perfectly in *VP-Planner*. There have been reports of some bugs in *VP-Planner*, but the latest version I have (1.5) does not have any of the problems I saw in earlier versions, nor has it bitten me with anything unsuspected since I loaded it onto the hard disk.

On the other hand, not all spreadsheets created by *VP-Planner* will run in *Lotus*, because *VP-Planner* has features not found in *1-2-3*. The graphic section of the program saves graphs which are compatible with other Paperback Software products and may not be used with other products designed to work specifically with *Lotus* output.

VP-PLANNER'S UNIQUE FEATURES

The differences between *VP-Planner* and *Lotus* are interesting. When you pick up the *VP-Planner* documentation, the entire first half is devoted to the concept of a multidimensional database. This is presented as the package's most important feature, the one that makes the product significantly better than and different from you-know-who.

When first booted, *VP-Planner* greets you with a menu which gives you the option of running the spreadsheet only or creating and editing the multidimensional database structure. If you do not use the multidimensional database, this choice allows you to load only the code for *VP-Planner*, which leaves more memory available for your spreadsheet.

Additionally, you can set a path for your files at this time, as well as look at a directory. The opening menu also allows you to transfer to and from DIF files or quit and return to DOS.

So, what is a multidimensional database? Do I really need one? If I had one, what would I do with it?

By giving you a look into a database, *VP-Planner* adds further dimensions to the usual three—time, accounts and products, for example. It gives you the ability to relate two additional categories into a single cell. *VP-Planner* can and does allow you to set up applications which view combinations of up to five things as slices through a database.

Picture, if you will, a series of identical spreadsheet templates, all lined up one behind the other. It might be a set of department budgets, it may be sales forecasts from various divisions around the world. A vertical column in each of those templates represents months of the year. The rows represent product lines. The intersection of the rows and columns (cells) contain the projections for the product lines. The spreadsheets themselves represent districts, or departments or the like. The multidimensionality of *VP-Planner* describes its ability to address any of the slices (horizontal, vertically) back through time and/or back through locations. If you have used the automatic linking ability of *MultiPlan* to link spreadsheets, you have some concept of the greatness of automatic updating and consolidation. Expand that to doing the work interactively at the keyboard with the slices as you wish, and you can see the usefulness of this multidimensional modeling.

Now add to that the ability to read and write *dBASE* files as part of your spreadsheet effort, and you begin to see that although *VP-Planner* is an advertised "clone" of *Lotus 1-2-3*, it really moves into a genre all its own, using the spreadsheet metaphor as the basic implementation template. Whether the everyday user is sophisticated enough to need or appreciate these features is another question.

There are also some additional features built into *VP-Planner* which are very helpful and which do not reside in *Lotus 1a*.

VP-Planner has what's called an "AUTOKEY" command, which keeps track of your keystrokes automatically and stores them as macros. This, as any macro builder knows, will greatly reduce the headaches and time in building and debugging complicated macros.

A ZERO column width column also is available. You can use it to hide macros or to help set up the display for producing specific reports, or even to hide intermediate fields and formulas which would, in your opinion, clutter up the spreadsheet with numbers which get in the way rather than add to the solution.

The RANGE NAME sections also provide a range directory which shows you all the range names and their cell addresses.

In the graphics mode, you can recall and look at a previously saved graphic with a Look command.

You can use up to a 15 character password to protect your files from strangers. However, *VP-Planner* uses an encryption and protection algorithm that's different from the Lotus version, so that there is no compatibility in this area.

VP-Planner will also read files with extensions other than ".WKS" so you can read spreadsheets created directly by *Lotus 1-2-3 Release 2* or *Symphony* without having to rename them first.

CONCLUSION

VP-Planner is indeed a workalike of *Lotus 1-2-3 release 1A*. It also contains the ability to use the spreadsheet as a window into both *dBASE II* and *dBASE III* files. And it allows linking of spreadsheets in three dimensions with extracts of data available in two additional slices. The combination of these factors, plus the low price for an unprotected version, makes it a superb purchase. (Paperback Software International, 2830 Ninth St., Berkeley, CA 94710, 415/644-2116.) □

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The n.f. Factor: Online Terrorism Among The BIXen

By Brock N. Meeks

"The n.f. Factor." It sounds like the title of a paperback thriller, and it has all the ingredients of a Ken Follett novel—intrigue, cunning, treachery, the fate of a community in the balance.

For some 18 months, a person known only by the alias "n.f." brazenly breached the security of BIX (BYTE Information Exchange), *BYTE* magazine's computer conferencing system. n.f. carried out a self-imposed mission of electronic terrorism that included vile outbreaks of racial bigotry and death threats.

To counter the n.f. factor, a nationwide task force involving two police agencies, the Secret Service, the FBI, and members of the defense intelligence community marshalled its combined power in an electronic manhunt, the like of which was never before seen in the online community.

Intelligence professionals solve this kind of mystery by convening something called "the murder board." A group of second-guessers, the board reexamines the facts while retracing actions in light of subsequent events. The process, which can reveal anything from a double agent to misguided motivation, is called "walking back the cat."

Let's apply a similar tactic to the ensuing story of the n.f. factor, a blatant attempt to embarrass the technical reputation of *BYTE* magazine, and reduce its flagship, BIX, to schizophrenia, chasing electronic ghosts.

THE BEGINNING

The story begins, oddly enough, with an open door: the BIX sign-up process. This entails nothing more than dialing up your local Tymnet node, entering "bix" and your name. You then provide a credit card number, for billing purposes, and, finally, choose your own password.

After giving BIX a valid credit card number (the system cross-references the number you enter with a database of all issued numbers) you are given full privileges on the system. And therein lies the seduction: there is virtually no "front door" security to BIX. Because the system allows *anyone* full access after the entry of *any* valid number, the potential for credit card abuse is absurdly high.

According to sources close to the investigation, n.f. would scan the books of stolen credit card numbers issued by MasterCard and Visa for a "starting number." Using that number, it was a simple procedure to change the last few digits until a "hit" (a valid number) was found, which BIX then verified in its database. (Apparently BIX would politely allow endless credit card "hacks" until such a hit proved successful.) The result was chilling: it was as if an intruder, intending harm, walked up to your front door and—finding it open—strolled inside, as if invited. Time and again n.f. found such an "open door"; once he was inside, all hell would break loose.

CATCH ME IF YOU CAN

Imagine coming home from a quiet evening only to find "long live the KKK—death to all blacks you n***er f**kers" spray painted on your sidewalk, front door, and on every wall of your house, and signed "n***erf**ker"—"n.f." for short. [*Asterisks inserted by MicroTimes—eds.*] You would be horrified, possibly in shock. Revolted by the disgusting bigotry, you'd feel that your privacy, your personal space, had been forcibly violated.

To a denizen of the online community, it's a very precise analogy. A place you thought was safe and secure turns out to be nothing of the kind, and this is exactly what was happening to BIX users.

Messages from n.f., like the one (regrettably) printed above, would, without warning, be peppered throughout the hundreds of conference topics on BIX, and they weren't always that tame. Along with such messages, n.f. continually taunted BIX and dared officials to stop the sporadic attacks.

Besides open messages, n.f. also began to send life-threatening messages, via e-mail, to a select group of individuals, usually female. Then, for a still unexplained reason, n.f. spat out a round of public messages that included threats on the President's life.

Enter the Secret Service; enter the nationwide task force.

CIRCLE THE WAGONS

To its credit, BIX kept the entire story secret, a feat that would have been impossible without the tireless efforts of BIX moderators.

These moderators are given charge over the hundreds of conferences and topic discussions on BIX. They provide a center point between BIX administration and the end user. In return they get free time on BIX and a (small) cut of the action. They were also "drafted" into an electronic "counter terrorist" force that sprang into action each time n.f. was discovered to be online. Moderators would electronically "sweep" their conferences and delete any n.f.-generated messages, hoping to spare the paying customers shock and embarrassment.

The whole "counterattack" plan was formulated in a "moderators only" conference. Thus, moderators could discuss strategies for countering n.f. attacks in private, away from prying eyes.

Only a few BIXen (as BIX users are affectionately called) ever caught on to what was happening. When a BIXen would openly complain about the "garbage" on the system, moderators would quietly, and privately, offer apologies in behalf of BIX. The plan worked like a charm.

But as n.f.'s attack became more frequent and more violent, the moderators began to pressure BIX officials for better security. Paranoia among the moderators broke out when it was discovered that n.f. began logging under a series of aliases. Suddenly, every unfamiliar BIX name became suspect. (As soon as a bogus n.f.-type account was discovered, BIX officials were alerted and the account would be deleted, forcing n.f. to reestablish a new account each time.)

In a special topic called "people problems," the paranoia and mutual suspicion created a climate in which moderators frequently pointed to a "suspicious" user's resume demanding that the user be "checked out" as a possible n.f. suspect. (The resume file on BIX allows users to store personal information such as full name, address, and interests). Moderator accusations were often prompted by nothing more than off beat system names. Infighting among moderators broke out, and some likened it to electronic McCarthyism.

As n.f.'s aliases proliferated, speculation arose that a series of "copycats" had infiltrated the system. Others disagreed and insisted n.f. was an "insider," possibly even a moderator, and that any discussion of countermeasures should be carried on in private. The "insider theory" met with disbelief and was laughed off as ludicrous.

BIX officials, however, knew otherwise, but chose to remain silent.

SETTING THE TRAP

The paranoia and disgruntlement among the moderators grew to almost fever pitch; they were being used as pawns in n.f.'s cleverly designed power play.

As the n.f. episodes continued, BIX officials secretly called on the expertise of FBI "profilers" in Quantico, Virginia. These profilers are experts at discerning the psychological and physical makeup of criminals simply by examining the facts surrounding a case. One source involved in the investigation called these profilers "almost clairvoyant."

According to one unnamed source, these profilers, as early as October of last year, supplied BIX officials enough information to prove that n.f. and subsequent "copycat" messages were the work of one man, and that he was, in fact, a moderator or BIX staffer. BIX didn't believe it, yet they couldn't ignore it.

The national task force, working in part on the information provided by the FBI, eventually tracked n.f. to Southern California. BIX did this

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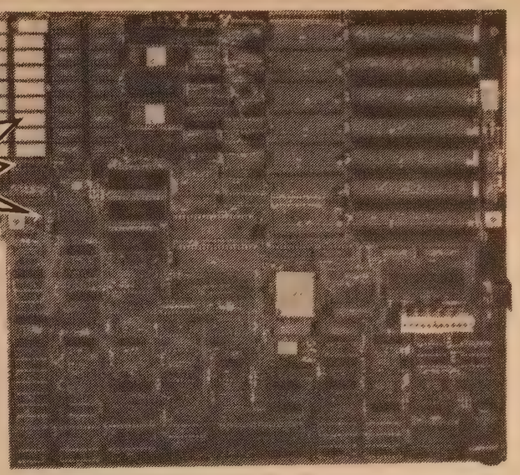

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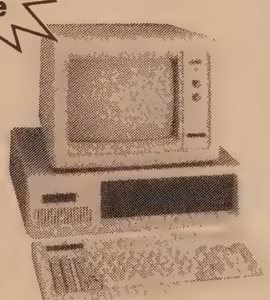

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by placing a "flag" on Tymnet that allowed them to track incoming n.f. type messages. The flag was set off whenever the password "XYZZY" was used to log into BIX.

Actually, the password became a "key player" in the investigation. For those not attuned to the significance of XYZZY, it's the "magic word" needed to enter the cave in the landmark game *Adventure*. One of the security agents working on the n.f. case told me, "XYZZY is one of the all-time hot passwords used by programmers." n.f., as it turns out, happens to be a well-known programmer.

By tracking the use of the password XYZZY, the Secret Service was able to gather enough evidence to obtain a court order for a tap on n.f.'s home phone. All they had to do now was sit back and wait, giving n.f. enough rope to hang himself. And hang himself he did. The tap was in place in January of this year, a full five months before any arrest was made.

Because n.f. was particularly set off by the reactions of female moderators, they were encouraged to "overreact." (Remember, n.f., as a moderator, could read all comments entered in the private "moderators only" conference.) Attacks from n.f. predictably increased as the "panic" level of the female moderators became more pronounced.

This baiting tactic was carried to an extreme when Pat Kelly, a member of the McGraw-Hill security team assigned to the case, signed as "Patricia Kelly" from "Soul Magazine" (thus giving the appearance of being both female and black) in hopes of drawing fire from n.f.

The plan went awry when a keen-eyed moderator pulled up the resume file for Patricia Kelly and noticed that the Detroit address listed for Soul Magazine didn't match the area code listed for the phone number. The next day, Patricia Kelly was mysteriously transformed into Pat Kelly (sans resume file) and was never heard from again.

The final trap came when BIX officials placed a bogus message in the moderator's private conference announcing: "Illinois State Police and McGraw-Hill Security have identified n.f. He is a juvenile in the Chicago area. The state police took him ... into custody early last week ... The police and security people are confident they have gotten n.f. since there have been no calls in over a week. They say n.f. should no longer be a problem." (Because n.f. often placed a phony Chicago address in his resume file, the popular opinion among moderators was that n.f. was a teenager living in the Chicago area.)

This message, I later learned, was needed to draw out n.f. one final time. The investigation had stalled—n.f. had simply stopped logging on. I've learned from sources close to n.f. that he had, in fact, decided to stop his reign of terror; however, he couldn't resist "just one more time."

The "bait" was placed by BIX officials at 5:37 EST. n.f. bit some four hours later, and he was arrested by the Secret Service in his Thousand Oaks, CA, home. At Secret Service headquarters, n.f. signed a full confession.

THE FINAL HOURS

On Wednesday, May 6, 1987, BIX released an official—to moderators only—notice, stating: "Siegmund Franz Kluger ... known as Sigi Kluger and skluger on the BYTE Information Exchange, was arrested ... by Secret Service agents ... Kluger was charged [under a federal law] which prohibits the knowing use, with intent to defraud, of one or more unauthorized access devices during a one-year period."

Kluger was arraigned before a U.S. magistrate in Los Angeles. He was released on a signature-secured bond despite the fact that FBI profilers noted in their profile that Kluger could be dangerous. (The U.S. magistrate did not have access to the FBI information.)

But Kluger, I've learned, won't be officially charged with computer fraud; that charge was just used to hold him. Sources at the U.S. Attorney's office said he will be tried on credit card fraud, a federal offense.

This explains why it took so long to apprehend Kluger, and why BIX let the anguish of his attacks continue. To present a case for credit card fraud, a person must commit at least 15 such acts. When BIX finally resorted to posting the bogus arrest message to bait Kluger, he had stopped one short, at 14.

Kluger's indictment before a U.S. grand jury was slated for June 1, 1987, with a trial date to be set at that time.

THE HUMAN ELEMENT

The most bizarre case of computer intrusion in online history has ended. The n.f. factor points out just how dark the dark side of this medium can get.

In walking back the cat to seek the genesis, do we exaggerate the human element? Maybe we don't exaggerate it enough.

If nothing else, the n.f. story makes us highly aware that, for all the high-tech gadgetry we "time rebels" place between ourselves and the outside world, the medium is still about people, dependent on people, and vulnerable to the very people trying to harness and define it. □

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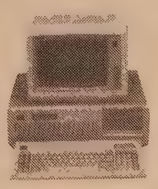

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Miscellaneous Solutions To Perennial Problems

By Ken Milburn

The avowed purpose of this column is to talk about the whys, hows and why nots of marrying various PC accessories in order to get a specific kind of job done quicker, better and easier. But some packages are solutions in themselves, or contribute to solutions in a variety of job categories. I'd be remiss not to report my experience with these stand-alone wonders. Therefore, this issue's column is devoted to them.

POINT AND CLICK DATA ENTRY

What looks like a mouse, has buttons and a tail like a mouse, but saves typing keystrokes instead of arrow-key poking? A Saba Technologies handscanner, of course. It's different from the full-page character-recognition scanners we're used to seeing. What it does is allow you lift random chunks of words off a typed page and automatically enter them wherever you've placed the cursor on your screen.

This gadget answers a long-standing prayer of mine. I get bundles of typed press releases, many of which contain small amounts of information I'd like to track. If I simply filed the pages, I'd soon drown in paper—and never be able to find the information when I needed it. Now I can simply call up ACT, wave the Saba "mouse" across the company name and watch it appear in the appropriate data field on my screen. Ditto all the other fixed fields, regardless of where (or in what order) the needed information appears on the original page. Then I can go to the notes field and just start entering any information I might otherwise have highlighted with a marker. If your typing pool spends most of its time re-keying data produced by other computers for database and spreadsheet entry, the Handscanner could repay its cost in no time.

You just can't do that with a full page scanner. Sure, some of the more sophisticated ones come with Optical Character Recognition (OCR) software that lets you scan only part (or even several parts) of a page. But I haven't seen a package yet that allows you to designate a destination location for each of these "windows." Even if you could do that, it would probably be more trouble than I'd care to invest.

There are some drawbacks to the Saba. It can recognize the most commonly-used laser, dot-matrix and daisy-wheel printer output. Still, about 30% of the typed material I get can't be scanned. Typeset, badly photocopied and marked-up originals are taboo. Accuracy depends on keeping the mouse aligned with the text, so you're bound to have to correct some errors—but it's much more efficient than typing from scratch. Also, the scanner adapter fills one of your expansion slots, and the card's 9-pin connector is easily mistaken for an AT's serial port. That's a disaster waiting to happen, because this port supplies power to the scanner. The juice could destroy some serial devices if they were absent-mindedly plugged into it.

Copyright © 1987 by Ken Milburn. All rights reserved. *Ken Milburn is a freelance writer on Microcomputers. His articles have appeared in numerous computer publications, including* PCWorld, InfoWorld, Computer Graphics World *and* MicroTimes. *He also does system configuration for small businesses. He can be reached at (415) 331-6926 or by sending E-mail to (ken) on The WELL, (415) 332-6106.*

The ProPrinter adds up to a gadget so much more efficient than anything preceding it that you owe yourself a demo.

MORE POINTING AND CLICKING

After IBM's PS/2 announcement, someone quipped that they wondered if IBM stood for "Iwanna Be a Macintosh." That's partly because the PC is rushing to become easier and more efficient to use. Part of the plan is to make greater use of graphics and point-and-click software environments like *Windows*.

Up until last week, I had yet to see the perfect pointing device. Digitizing pads are the most natural because they feel like pencil and paper. But they're tough to cost-justify and are real-estate barons. Mice are affordable and accurate enough for 98% of our requirements, but they don't work well when they encounter the note scraps, paper clips and other paraphernalia that fill my desktop. Joysticks and trackballs are space-efficient, but feel just plain peculiar.

A startup company in the East Bay, however, has the answer. It's called the ProPointer. Your existing software will think it's a Microsoft bus mouse. It needs no more space than a trackball and could even be built into a keyboard. You hold the pointer like a pencil, touching down whenever you want to "select." You can program all sorts of characteristics into it by selecting items off a menu. It all adds up to a gadget so much more efficient than anything preceding it that you owe yourself a demo. Look for it in your neighborhood store within a week or two of reading this item. I'll report on it a bit more in an upcoming graphics column. By then, I'll have had a chance to put it through its paces a bit more.

GETTING YOUR ACT TOGETHER

Most of the personal time and contact management software I've come across has been so simple (and inflexible) that you could do better by setting up a tracking system in a simple database like *PFS, Q&A* or *Nutshell* (any of which, by the way, provides all the database most entrepreneurs will ever get around to using).

Well, I've finally seen a program that could *define* personal time, expense and client tracking on the PC. It's the product of a group of former mainframe salesmen, and these folks have been trained to track time efficiently. And they know what it takes to produce a professionally commercial software product.

Called *ACT,* the program is published by Conductor Software. There are two reasons I think it will become a monster seller: flexibility and ease of use. The package uses a Lotus-type prompting menu, so there's not much computer-speak to remember. You don't have to be any sort of typist to keep complex records, either. Most fields can be filled in by picking a standard entry from a pop-up list. Times and dates are filled in by the system clock and a built-in calendar, in combination with pop-up lists that let you move an appointment, call or task ahead by an hour, day, week, etc. Onscreen status reports can be called up in a keystroke, so you can see upcoming appointments, calls that need to be made, and so forth. You don't even have to type letters, because automatic form letter generation is built in.

When it comes to flexibility, there are 15 fields that you can easily define yourself. There's also a built in reference library for any tabular information you might care to keep on line; things like metric conversions, commuter flight schedules, or UPS rates per pound. At any time while the program is running, there's a "quick key" that pops up a window for quick calls and "to-do"s that are unrelated to a particular client form. You can have as many free-form, unlimited length notes attached to a record as you want. The system keeps them all in chronological order. In fact, *ACT* keeps an audit trail on everything you've done and, where pertinent, relates these activities to contact profiles. You can also attach expenses to client profiles, then automatically generate an expense report for your boss or the IRS.

WHERE'S THE 386 STORY?

Ever since I did the feature on November COMDEX's 386 developments, *MicroTimes* has been getting letters and phone calls asking when we'd run the hands-on 386 feature we promised. Sadly, it takes considerable time for announcements to become reality.

We started out by building our own 386 machine using a RAM Systems 286/386 mother-

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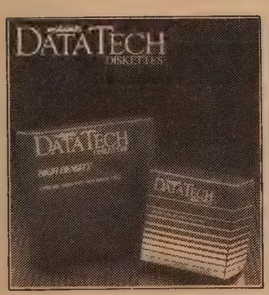

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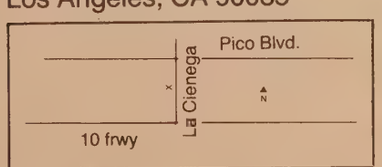

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board in my Blackship AT. The combination runs every bit as quickly and reliably as I was told it would. Haven't had a single compatibility problem in six months' worth of reviewing some fairly esoteric software, either. Several people were especially interested in it because this was one of the few boards announced that was small enough to provide an upgrade path for the millions of PCs and XTs.

We purposely delayed the article until we had an operating environment capable of taking at least some advantage of the 386's multi-tasking and extended memory capabilities, and until we could get our hands on at least two megs of 32-bit RAM. During the wait, RAM Systems was bought out by a larger company. RAM notified me of the change, along with the new address and phone. I scribbled the info on the handiest scrap of paper, misplaced it and haven't been able to track them down since. (I didn't have my *ACT* together...) If anyone out there knows where the former RAM Systems is, please call. I'll see that the information gets posted here.

Meanwhile, there's good news on the 386 front. The hands-on article is truly on its way. It seems that Micro1, one of the Bay Area's larger clone vendors, is building a 386/AT-compatible based on Intel's 386 motherboard. I'm using it as the basis for building a supercharged desktop workstation. The object is to see how close an end user can come to beating IBM's Model 80 at its own game—and for less money. It's going to have a 70MB Atasi high-speed drive, RLL formatted to 105MB with access times under 5ms (thanks to a new controller called the Awesome I/O), a 1.2Mb 5 1/4" floppy, a 3.5" 720K floppy (for easy data transfer with PS/2, laptop and Mac machines), a 15MB Sysgen removable media hard-drive, a 387 math co-processor, at least 2MB of 32-bit memory and high-resolution color graphics. This machine will use *DesqView* 2.0 to run both graphics and text-mode software concurrently, using currently available MS-DOS software, running in the virtual 86 mode of the 386. Besides the 3.5" drive, the keyboard (DataDesk 101 Plus) and color graphics display will reach for PS/2 compatibility. I've had most of these components installed and running for several weeks, so it's safe to say that the full report will soon become a reality.

INNOVATIVE COMPATIBILITY

AT-compatibles, including some very solid ones, are often boring in their slavish imitation of IBM's original. So I'm happy to report that Tandon, the company who brought you the floppy drives in the original IBM/PC, has brought out a fully compatible machine that solves some problems the AT doesn't address. The machine is called the PAC286. Substantially smaller than the standard AT, the machine lets standard DOS applications break the 640K barrier and has bays for a pair of removable 30MB hard drives. You can have 60 megs on line, back up one drive to another, remove both and lock them in your safe.

Of course, removable media drives like the Sysgen and Bernoulli units have been around for some time. The Tandon units aren't cartridges, but complete drives. Since they're 3.5" units, however, they're small and light enough to drop in your briefcase or to UPS across the country. Completely enclosed in a shock mounted case, they'll take heavy punishment. The normal 40ms AT drive is rated by the Advanced Norton Utilities at 2.5 times the speed of an XT disk. Tandon's built disk caching into these little packages and Norton checks them out as 3.5 times faster. Shops with several computers to support should find the PAC286 system cost effective in more ways than one. You can buy the whole system for less than the cost of dual drive Bernoulli box add-on. The whole system, including a full megabyte of RAM, serial and parallel ports is scheduled to retail for under $3,000 with one 30MB hard disk. You'll see even better prices advertised here. Extra 30 meg drives will sell for about $300, and you can have as many as you want.

The real savings for large companies are in consulting and training fees saved. A consultant can configure a department-wide software system once. Thereafter, it's just a matter of copying and distributing Datapacs. And an employee moving from one desk to another can "take his computer with him" —in the form of a Datapac.

UPCOMING GRAPHICS COLUMN

Graphics are becoming so important in the business world that *MicroTimes* asked me to start a new column on the subject. I'll be concentrating on the uses of graphics as they apply to the business world, and how they fit in the context of desktop publishing, expanded means of inter-computer communications, and the importance of integrated (read Mac-like) computing environments on personal computers. Although we'll cover applications for IBM PC/PS2-compatibles more frequently than others (because more of them exist), we'll also talk about the Mac, the ST and any other "thingamabob that does the job." □

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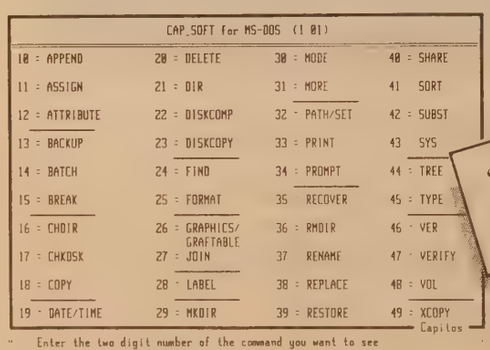

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VOL. 1 NO. 2 FALL 1987

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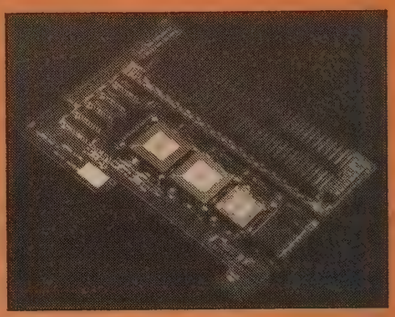

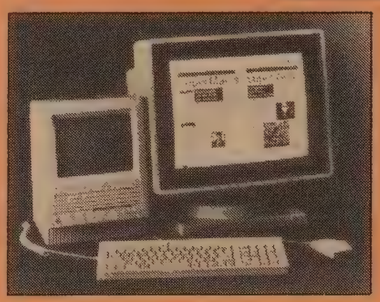

100
Macintosh Products
New products to help your business get the most from its Macs, from SuperMac's new SuperView monitor for the SE, which allows you to see full-sized facing pages, to new software which takes advantage of the latest Mac technology.

Beyond Mac-Fattening

Third-Party Hardware Developers In A Changing World

By Robert Beauchamp

Two years ago *MicroTimes* ran an article about companies that would upgrade your Macintosh from a mere 128K to 512K—and even to one and two megabytes. Amazing stuff back then. We called it *They Want To Fatten Your Mac, With Or Without Apple's Blessing.*

Many of these companies started out as attic operations, cracking the Mac's shell and offering upgrades at a far lower price than Apple dealers. They saw it as providing a necessary service. Apple saw it as a warranty-violating infringement.

Even then, there were companies out for the quick upgrade buck. But there were also those who had higher aspirations, and those companies are still in business today. The reason all of them have credited for this success is Service, Service, Service! And of course a quality product.

The major shift in these companies has been a move away from supplying a single product or service to providing system solutions. By combining in-house products with Apple and other third party products they are offering systems that solve individual clients' specific needs.

Since those days there have been a number of transformations in the Mac world. One of the most significant was Apple's change in attitude toward third party developers. With the ouster of Steve Jobs came the ouster of the idea of the Mac as a toaster. With John Sculley came an open invitation to third party developers to go ahead and do their best. And they have.

Another transformation is the one that happened to these developers themselves. No longer just hotshot engineers or hardware hackers, they have matured into savvy, sophisticated business people with definite goals and business philosophies. Their plans are as comprehensive and elaborate as those of any major corporation.

Levco's Duane Maxwell: "We see a large amount of corporate acceptance, and we see a niche for systems integration. The corporate world does not want to go shopping around. I can't see 3M or General Motors or someone like that going down to the local computer dealer to buy Macintoshes."

Today they are less likely to tell you about the intricacies of their products than the intricacies of running a business in the Macintosh marketplace. Here then, in their own words, are the trials and tribulations, successes and frustrations of those who, two years ago, wanted to fatten your Mac.

Duane Maxwell, Levco

The team at Levco started their upgrade business in a spectacular way. They did upgrades right in their booth at the Macworld Expo. Today they are best known for the Prodigy board, which vastly improves Macintosh performance. Duane Maxwell describes Levco as an engineering company that spends upwards of 80% of its total costs on research and development. That, however, has not prevented him from seeing Levco as a business in a wildly fluctuating market.

"Our biggest growth is occurring now, believe it or not. A lot of people were a bit wary of what was going to happen to us when the Mac II came out. In fact, they were worried about most of the third parties. Well, it turns out it worked very well for us. Look at all the stuff we did without slots. Give us some slots and that gives us some extra room to move.

"The difference between us and the new machines and, say, an IBM third party house when their new machines came out, is great. Because those people were dealing with a machine that didn't do that much. They had slots to do every-

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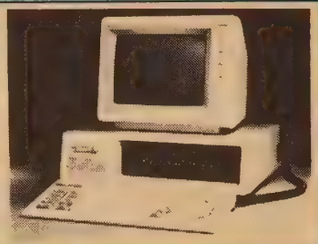

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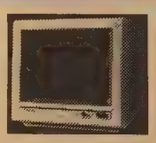

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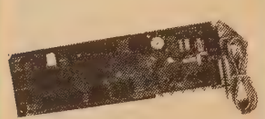

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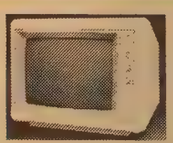

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thing. The new IBMs integrate the video, integrate all the serial and parallel ports and the memory all on the motherboard. So there isn't much need for 60-70% of the card manufacturers.

"In our business we've always had to deal with those restrictions. We've always had to deal with a machine that already had video and already had a certain number of I/O ports built into it. The only expansion it needed was what we were involved in, which was memory upgrade. Basically Apple has opened up the world to us and has not restricted us in any way.

"The other thing that happened to Levco, which is pretty unique, is that we became an Apple VAR. What that does is gives us the ability to sell the entire Apple product line in addition to our own product line. What we sell under our VAR program is what we call our Prodigy Workstation, which is Macintoshes that have been accelerated using our boards.

"We have also picked up a few third party products. We are positioning ourselves as a one-stop shop for the corporate client. A lot of these new machines, including the Mac II, are very powerful machines, and in our opinion the average Apple dealer is not capable of properly supporting the product to a major corporate client. We can sell entire systems and provide the after-sale support. One part of Levco is turning into a systems integrator.

"Our relationship with Apple is becoming steadily tighter. We trade a lot of information and things that we discover and give to them, and if there is something they feel will affect us they let us know about it.

"After Steve Jobs left things became very open to us. Almost immediately after that there was a tremendous shift, and we became almost legitimate in many ways. We could talk to them, and there was a tremendous exchange of infomation.

"We are expanding into this corporate world. We see the market changing. We expect a lot of corporations to start making heavy investments in the new Macintosh technology, because it's okay to do it now. If you really want MS-DOS, you can go buy an MS-DOS card for your Mac II. Or for your SE. So there is no real excuse for a company not to buy a Macintosh.

"In many ways the software is far more sophisticated now. You start seeing a shift now where people are saying 'when am I going to get *PageMaker* for my IBM PC?', or 'when am I going to get *Excel* for my IBM PC?' People are looking at the Macintosh as the main driving force for innovative software.

"We see a large amount of corporate acceptance, and we see a niche for systems integration. The corporate world does not want to go shopping around. I can't see 3M or General Motors or someone like that going down to the local computer dealer to buy Macintoshes. I just can't see that. We feel that the corporate world needs someone with sophistication and someone who knows the machine well.

"Apple is now encouraging the hardware developers to develop things. In fact they've laid down some pretty healthy hints about what it is that they'd like people to do. And we are developing things along those lines. Apple is aggressively helping the third parties sell their products, and that encourages us to develop more products.

"Our view is to insulate ourselves from a lot of the major fluctuations in the marketplace. We've always insulated ourselves from these things like the Japanese chip restrictions. We tend to make a Mercedes product and we're able to buffer a lot of that. We don't fluctuate wildly since we aren't in the mainstream commodity market of upgrades. We never try to be the lowest price, although on some of our products we are."

Beck-Tech's Stephen Beck: "Memory upgrades were clearly a popular category at one time. But for any company you have to look at market share and profit margins and say whether a particular product has lived its life. Products don't last too long before a better one comes along. So we're constantly in the development of new things."

Stephen Beck, Beck-Tech

Beck-Tech was already an established company by the time it went into Mac upgrades. Now, however, it has expanded into even more Mac-related areas. Stephen Beck describes the shift his company took out of the upgrade business.

"Beck-Tech is going into its ninth year as a company and its third year as a Mac product company, so the company has been doing a lot of other things beyond the Mac. In our Mac product division we went from Mac Megabytes and brought out Fanny Mac, which is one of the more popular cooling accessories. We brought out *MacMovies*, which is animation software for the Mac. It's doing very well and does some very unique things.

"We got out of the memory upgrade business because the market share was too thin, and with the Mac Plus it was quite clear that the semiconducter companies who made the SIM modules would ultimately be the memory upgraders for the Mac Plusses.

"Our relationship with Apple was always pretty good, and it's just getting better and better. We are a certified developer, registered developer, a VAR—whatever there is, we're in it. We talk regularly with any one of four or five evangelists.

"We have a whole line of products for the Mac SE and the Mac II that will be coming out in the next two years. They include graphics type products, desktop publishing hardware products, and accelerators.

"Our Chromotron was the first color video converter for the Mac, but that's sort of last year. Our product focus for the coming round is something called DTV: Desktop Television. It uses the Mac as a miniature television studio. We have a number of products coming out in the next year or two that are related to this video interface between the computer and video tape. The studio gear that does this stuff costs upwards of hundreds of thousands of dollars. With a Mac and appropriate accessories it should be possible to duplicate some of these functions with a $10,000 package.

"So we're not just memory boards and accelerators. Those are really components in our business strategy of using the personal computer as a video studio.

"Memory upgrades were clearly a popular category at one time. But for any company you have to look at market share and profit margins and say whether a particular product has lived its life. I'd say this, one thing is for sure these days—products don't last too long before a better one comes along. So we're constantly in the development of new things.

"The nature of this market is that people with good products and good support and good consistency have a better chance of survival, but its still a tough, competitive world out there."

Steve Edelman, SuperMac

SuperMac Technologies isn't Steve Edelman's first company. His first wasn't nearly as successful as SuperMac Technologies, which now will make more in one good day than it did in its whole first year. SuperMac has gone from producing memory upgrades for the Mac 128K to making its amazing 19″ color screens and other peripherals for the Mac II and the Mac SE. But according to Edelman, these products are only part of the attempt to solve a customer's problems with systems solutions. After an extended sabbatical in Asia, Edelman returned with a strong service-oriented philosophy that he used as the cornerstone for SuperMac.

"What I'm really interested in is communications among people. Right now a lot of people spend a lot of time just calling back and forth and trying to talk on the phone. We're making a class of products that integrate things in such a way that you can concentrate more and more on what you're trying to do and less and less on how it's going to get done. This class of products has a lot

SuperMac's Steve Edelman: "When we were a small company not doing particularly interesting work, Apple responded in an extremely reasonable way—they ignored us. As the work we began to do looked interesting, they began to pay attention."

to do with interpersonal communication, networking and messaging.

"You start from the basis that people have to be happy. Then if you turn around and find out for some reason that this level of support cannot be fiscally justified on a product, then you don't do the product. The fundamental basis for a company has to be the way it treats its customers. Not its customers to be, but the people who have already paid you money. Those people have a level of happiness that they have a right to expect.

"You have to understand and feel as an absolute basis of the theology of your company that you are committed to understanding what that customer needs and wants before you decide to go into a product area.

"With regards to Apple, I would say that our relationship basically started out this way: when we were a small company not doing particularly interesting work, Apple responded in an extremely reasonable way—they ignored us. As the work we began to do looked interesting, they began to pay attention.

"Overall its support, at least of us, and I really think of third parties in general, has been pretty good. It's one thing to say, 'well gee, they don't pay attention to us.' But it's pretty incredible when you compare what they do with what other companies in any industry do. You don't find Honda or GM helping third party developers make accessories for their cars. And you don't find IBM doing a hell of a lot for its third parties. So even when Apple was getting criticized for third party support I had to say, 'C'mon guys, you're comparing Apple with Apple. You should compare Apple with everybody else.'

"In general they've just been wonderful. Overall I think the whole attitude within Apple is that if you as a third party developer seem to know what you're doing, they'll bust their ass for you. But you have to spend a lot of time down there explaining what you're trying to do and putting in the effort to tell the people, 'hey look, I'm worth paying attention to and here's why.' If you do that, they'll pay attention, and if you don't they'll say 'well, we don't understand what you're all about and we're very busy people.'

"You get out of it what you put in, and I think that if there's any piece of advice that I would give to another third party developer, its that you get out what you put in. Go down there and tell them why you're doing something interesting, because if you don't they're just not going to see it instantly."

MacMemory's Carlos Suarez: "Our major focus is to be the leading company in Macintosh peripherals. That includes the video type products, the acceleration multifunction type products and the mass storage type products. The general direction has been the same since day one."

Stacey Reineccius, Julian Systems

Like Beck-Tech, Julian Systems has moved out of the upgrade business. And like Levco and SuperMac, it has moved into putting systems together for corporate clients. They share the strategy of combining in-house products with Apple and other third party products to assemble a system that solves the individual needs of the client.

"We've gone from literally an attic operation to $2,000,000 this year, and growing past that.

"We achieved a Value Added Reseller status with Apple Computer that allows us to put together turnkey systems for music, telemarketing and telemarketing business management.

"We've turned primarily into a development and systems house. In other words, we do a tremendous number of integrated vertical market systems. That's where our primary business is these days.

"We took a focus. We started out without much financing and needed a way to do the financing. We focused heavily on products that don't conflict with the Apple warranty and don't conflict with Apple guidelines. We focused much more on the software and systems side of the business. Rather than going head to head with a multi-billion dollar corporation, we instead got their cooperation and assistance.

"Julian Systems is in business to help keep other people in business. That's the bottom line.

"I think something that would best illustrate this is in the terminology that we use ourselves. A lot of computer sellers and retailers refer to the people they do business with as customers. Customer is a one time thing. A customer is somebody who comes in, buys something and leaves with a pre-packaged small item box. And you don't care if you see them again, unless they are coming back to buy more.

"We don't do that. We refer to everyone as a client. A client is much more akin to the situation with your doctor or your lawyer or another professional, someone you build a relationship with, coming back again and again for different services.

"No matter what phase of their business they're in, or what they are doing, we're able to provide them with a continuing relationship with high quality people and high quality products.

"We're able to really provide services and products that people need to stay in business. We're here for the long run, not for a short run hit. Look back two years at the people advertising upgrades. At one time I counted 23 different organizations. Out of all those companies, I know of only three or four that are either a) in business or b) doing anything relating to the Macintosh.

"That's unfortunately a typical example of what happens very often in this market. People see a market opportunity and there's a gold rush. There's a stampede for that market. Julian Systems is trying to stay out of that. We're here to provide a consistent quality level of service for the business customer."

Julian Systems' Stacey Reineccius: "We focused much more on the software and systems side of the business. Rather than going head to head with a multi-billion dollar corporation, we instead got their cooperation and assistance."

Carlos Suarez, MacMemory

Carlos Suarez of MacMemory has also noted a tremendous change in his company. Although MacMemory no longer modifies motherboards, they still make products like the TurboMax accelerator board. Suarez credits the depth and experience of his executive staff for much of MacMemory's success.

"The company has changed tremendously since the time we were doing upgrades on the Macs and reworking motherboards, etc. Almost all our products currently do not modify the Apple motherboard and are clip on sorts of products. They're still good but we've enhanced them.

"We've also gone far on memory upgrades. We went to expanded memory on the 512E and we go up to the maximum which is 4 MB on the current Macintosh memory map.

"We have also gone beyond the memory expansion products to accelerator boards. We have targeted two different lines of accelerators—one, which we feel today is affordable, is the TurboMax. It gives you approximately 2 1/2 times the compute power at 16MHz. For the future we're designing our 68020 product and intend to release it with Apple's production release of the Mac II.

"We are also committed to a total workspace solution. We have internal hard disk products which we sell with our accelerator cards. This gives you extemely high speed hard disk access.

"I think we have an excellent relationship with Apple. We're both a registered and certified developer. We've had seed units here in house as we've been developing for the Mac II and SE. Many of our managers are former high level Apple executives. The organization is well very tuned and extremely professional.

"We have people throughout the organization who have started companies previously, and who have taken companies to fruition and have been founders of companies. We also have a fairly strong investor in the group. The company is very well positioned, we believe, to be the leader in the Macintosh marketplace.

"Our major focus is to be the leading company in Macintosh peripherals. That includes the video type products, the acceleration multifunction type products and the mass storage type products.

"The general direction to become the leader in Macintosh add-on type products has been the same since day one. The definition of how those products should look, however, has developed as Apple has developed.

"It's fairly clear where the company stands. We've tried to make it that way so that the

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Ron Schaeffer, Software For Less

The major strength of Software For Less, according to Ron Schaeffer, is that it keeps in stock every Macintosh software product imaginable. They also provide an extensive service program. But there are clouds in this sunny picture. While most of the upgraders have moved directly into the Apple world by becoming authorized VARs and dealers, Software For Less has had to operate without this coveted authorization. Schaeffer describes the problems of running a Macintosh oriented business in this situation.

Ron Schaeffer, Software For Less: "We aren't able to totally satisfy our customers needs without being an Apple VAR anymore. It's not that we need it to stay in business, we need it to provide the services in one location, which is what our customers indicate to us that they want."

"We've continued to grow in the Macintosh market. We're exclusively Mac and we don't deal with anything but Mac anymore. We've gone about as far as we can go without being an authorized Apple dealer. We're in the process now of trying to negotiate with Apple for a way to become an authorized dealer. We aren't able to totally satisfy our customers needs without being one anymore. It's not that we need it to stay in business, we need it to provide the services in one location, which is what our customers indicate to us that they want.

"We've increased our service department to where we're probably servicing around 200 Macs a month now. We do repairs and upgrades.

"We don't do board swaps here, we do actual repairs. We have a real hard time, however, getting parts to do our repair work, because we're not an Apple dealer and Apple makes it difficult to get parts.

"But the service end of it is what we concentrate on. Everybody sells the same Mac or the same *MacWrite* or the same *MacPaint*. The difference is the way we sell it is with a lot of service and competitive pricing.

"A year ago we started a charter club. The benefits of the membership are really pretty enormous. Our members have about fifteen benefits that go along with it.

"We have a little over 2600 members in the group. It's been very successful and our volume has increased enormously because of it. The service is what people want and the service is what we give them. There are a great many of the members of Apple itself who are members of our buying group. [Guy] Kawasaki is a member, and John Sculley's secretary joined in the name of Apple.

"The authorized Apple dealership is a necessity to fulfill 100% of our customers' needs. It's very difficult for us to deal with our large corporate base and say, well we have all of *this* but you have to go over there for *that*. Most corporate buyers are in a position where they want a package. They want it, if possible, all in one place. And a lot of times that hurts us, because the corporate people will pay more if they can get it all in one place.

"An authorized dealership is a necessity for my business to keep growing and to keep providing the service that we provide. I know Apple is changing a lot of its philosophies, and how its going to affect my desire to be a dealer I don't know.

"I know a couple of dealers went out of business in the last month or two. There are a lot of Apple dealers that can't make a living simply because they aren't full service dealers. They're just selling boxes. As fast as they get a box in they mark it up 50 dollars and sell it. That's not how you stay in business. That's just selling boxes and that's not good for Apple and that's not good for the customer.

John Sawyer, CJS

CJS is a Levco dealer and a service oriented operation that still does Mac upgrades. While Levco has benefited from a close relationship with Apple, CJS is in the same situation as Software For Less—they're trying to get VAR status with Apple and have had to operate without full support from Apple. John Sawyer says that this has not, however, prevented them from growing, and tells how the mass exodus of companies from the memory upgrade business has actually helped CJS.

CJS's John Sawyer: "What we've really gotten into more and more is repair. There are far more repairs than there are upgrades these days. There's just a group of problems that are very common, and most of the calls that we get every day are pretty much the same problem."

"It's far less competitive now for the 512K upgrades. I know of only two or three outfits myself that do 512K upgrades within the area. People tend to call all over the place trying to find some outfit, and they generally come to us because we make ourselves known.

"We're still doing a lot of 512K upgrades and beyond 512K. 512K upgrades, however, have pretty much started to drop off. Most people have at least 512K now. A lot of the two-meg upgrades have dropped off too. I think what people are doing now is selling their Macs if they have anything 512K or less, and they're getting a Mac Plus or getting an SE.

"What we've done is go from memory upgrades, because that is not really happening all that much now, except to go to 1MB with some of the lower cost 1MB upgrades, to selling other things as well such as hard drives, floppy disk drives and some programs. We're also starting to get into some consulting and things like that. And we're looking to getting VAR status with Apple.

"If you're going to get into upgrades it's a good idea to be able to repair the things that you're upgrading. That's a problem a lot of upgraders didn't address. They knew how to simply clip out chips and put in other chips, but as to whether they could repair their work if it didn't work when they put in the upgrade or when it failed later on, that's where a lot of them fell down.

"That's part of the reason we were able to stay in business. We could fix what broke. We were very persistent as well. We just said we were going to stick it out and see what happens through all the competition and we'll see who's around in a year or two. And we managed to stay around.

"What we've really gotten into more and more is repair. There are far more repairs than there are upgrades these days. Macs usually fall apart in pretty much the same ways. There's just a group of problems that are very common, and most of the calls that we get every day are pretty much the same problem. It boils down mostly to the Mac's analog board. There are some parts that just tend to fail. It's the video section that has failed. And we do repairs for that every day. The logic board, however, is a lot more reliable.

"It's been a nice change. The upgrade business gave a lot of people the opportunity to break away from their old jobs and do something with a little more independence. That's what I've found here. It's been pretty grueling, but at least there is some sense of control. It took a lot of people away from things that they were doing that weren't so interesting and got them into a more interesting field."

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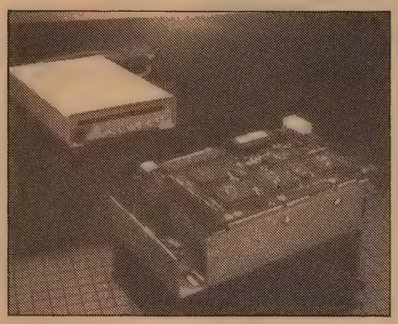

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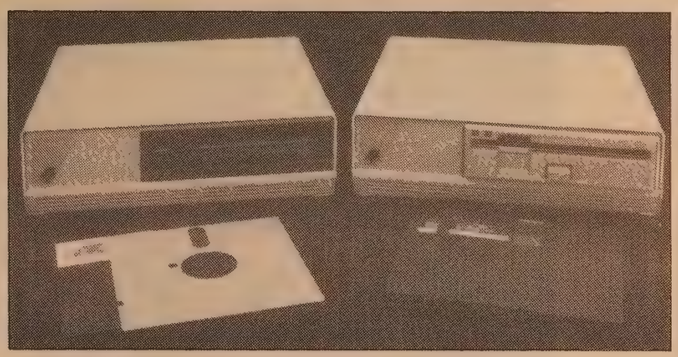

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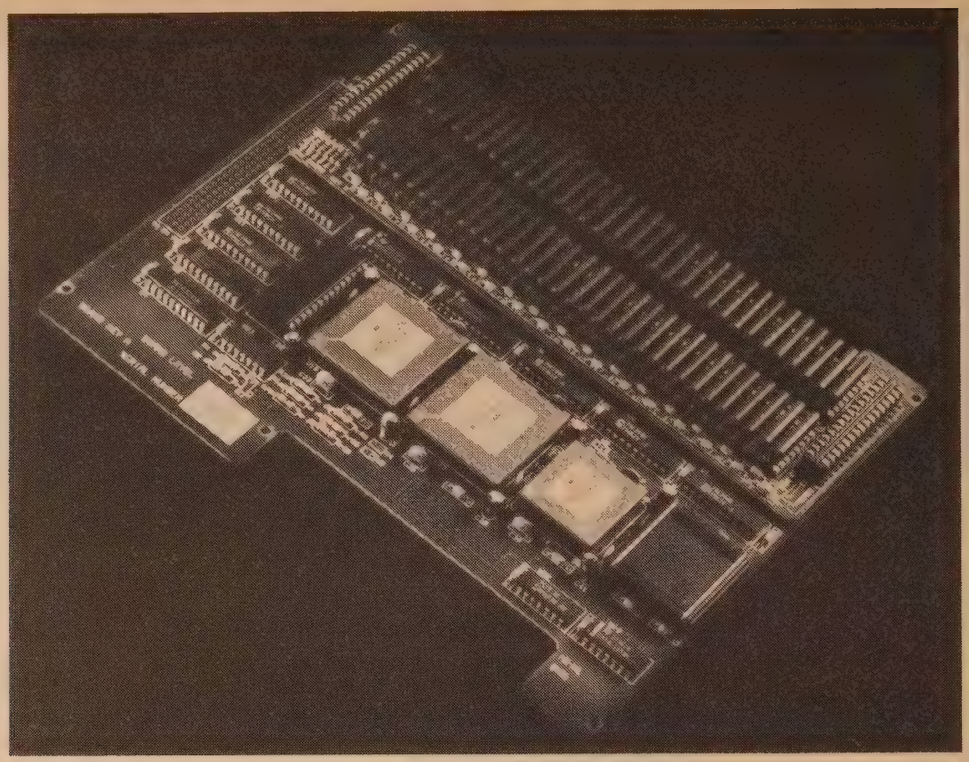

The Prodigy SE Board:
Workstation Power For Your Macintosh SE

By Jim Wolcott

For the power-user, the biggest attraction of Apple's Macintosh SE lies deep within the computer's sealed chassis: an internal, 96-pin expansion slot. This slot holds the promise of custom-tailoring the SE into an individual workstation, capable of MS-DOS emulation, high-speed networking and telecommunications, and other mega-power hardware to push the limits of the Macintosh performance envelope. Over the last few months, third-party manufacturers have been scrambling to create products to fill this slot; the first SE-enhancement product to be available in any quantity is Levco's Prodigy SE board. After working with the Prodigy SE for awhile, I can honestly say it's been worth the wait.

What's A Prodigy?

The centerpiece of the Prodigy SE is an on-board 16-MHz 68020 central processor (same as the upcoming Macintosh II), bypassing the SE's stock 8-MHz 68000 processor. Unlike the standard 68000 CPU, the 68020 processor affords a true 32-bit data path: standard Macintosh applications run somewhere between four and 10 times faster on the Prodigy SE than on a standard SE.

In addition to the 68020, the Prodigy SE features a "modular construction," allowing the installation of Motorola's 68881 math co-processor, as well as a 68851 Paged Memory Management chip. In standard configuration, the Prodigy SE is shipped with one megabyte of RAM memory, and is available in 2-meg and 4-meg onboard configurations. The Prodigy SE's internal Memory Expansion Bus is designed (in conjunction with the 68851 Paged Memory Management chip) to support up to 32 megs of RAM, a mind-boggling notion. (Imagine dumping the entire contents of a 20-megabyte hard-disk drive into RAM memory —and still having 12 megs left over for loading applications under *Switcher!*)

Prodigy Background

The Prodigy SE is actually a second-generation Prodigy. About a year ago, Levco shocked the Macintosh world with the introduction of the Prodigy 4, a board which included a 16-MHz 68020 CPU, a 16-MHz 68881 co-processor, and four megs of onboard RAM memory.

At the time of the Prodigy 4's introduction, its price was also shocking: $6,995. A year ago, the chips involved with the Prodigy 4 were barely in production, and the component parts alone cost nearly $5,000. Fitting the Prodigy 4 to a Macintosh was a formidable challenge: though mounted entirely within the Macintosh, the Prodigy featured a separate power-supply chassis and a cooling fan to keep the Mac from reaching critical mass. Installing a Prodigy 4 was, and is, tricky business.

Even considering its steep price, the problem for the Prodigy 4 was that few dealers were equipped to demonstrate the advantages of the upgrade. Worse, future compatibility of the 68020 CPU was in question: Apple Computer had not formally announced the configuration of the rumored Macintosh II, and potential customers were reluctant to commit to the Prodigy 4. Still, several hundred Prodigy 4s found their way into the field, primarily as engineering workstations, CAD/CAM applications, and for programmers compiling massive strings of code.

The Prodigy SE

The introduction of the Macintosh SE, and of the Macintosh II, changed the Prodigy situation entirely. The Macintosh II, with its 68020 CPU, ensured future compatibility for the Prodigy 4. More important, the Macintosh SE, with its built-in cooling fan, improved power supply, and built-in expansion slot, invited a second-generation Prodigy, one that could be entirely self-contained on a plug-in circuit board.

Installing the Prodigy SE is simple and straightforward. Though Levco recommends the installation be performed by an authorized Levco dealer, a comprehensive Installation Guide is provided, and anyone familiar with prying open the Macintosh can complete the installation in about half an hour.

However, the installation of our test unit went anything but smoothly. Under the supervision of a local Levco dealer, the Engineering Services Group of Huntington Beach, we carefully opened the Mac SE, disconnected the various cables, and gently removed the motherboard. At that moment, there was a great "whooshing" sound that lasted a full 10 seconds. Examination revealed that the end of the video display tube (CRT) had broken, destroying the vacuum within the tube. It's important to note that the tube, and the connection on the end of the tube, had not been bumped or touched in any way; the tube just chose that moment to commit suicide.

Fitting the Prodigy SE onto the Macintosh's motherboard was easy. The SE board plugged directly into the socket, and four threaded, plastic stand-offs aligned perfectly with holes already drilled on the motherboard. Tighten the four plastic screws into the threaded stand-offs, and the Prodigy SE becomes a secure, integral part of the motherboard. Gone are the days of solder-on connectors and clumsy plastic clips to hitch upgrade boards onto the Mac's CPU chip. With the replacement of the CRT, and the installation of the Prodigy SE, we sealed the Mac's cabinet. The Prodigy-enhanced SE worked perfectly at first power-up.

The 68881 Co-Processor

Several Macintosh performance upgrades have appeared in recent months, most of which offer

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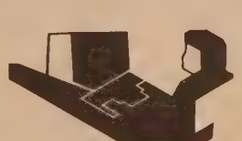

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Motorola's 68881 floating-point math co-processor. The key for performance with the 68881 is how the co-processor is "addressed" by the CPU.

With Motorola's 68000 CPU (clocked either 8 MHz as in the standard Mac, or 16 MHz as offered on some upgrades), the 68881 is considered to be a separate device within the Macintosh. Data is transferred to the 68881 co-processor and calculated; it must then be retrieved by the 68000 for the next instruction step. This takes time, and requires a long series of "commands" to execute the individual instructions.

The 68020 is completely different: the 68881 actually becomes a part of the 68020 CPU, and the 68020/68881 combination adds a new, high-performance "instruction set" to the Macintosh. Command routines that require as many as 40 separate instructions with the 68000/68881 combination can be executed with a single instruction on the 68020/68881. With the 68020, the addition of the 68881 represents a genuine "co-processor," a much-expanded and more powerful processing device. For software designed to make use of the 68020/68881 combination, the difference in speed is night-and-day.

Performance

Our test unit was equipped with the optional 68881 co-processor, and two megs of RAM memory. On power-up, the screen shows a handsome "Prodigy SE" logo, shortly followed by the "smiling Macintosh" icon (a slightly different icon, one with fangs protruding from its smile, hinting at the power within the upgrade). In a few seconds, the Finder appears—standard Macintosh stuff.

For the Macintosh SE, Levco provides a "Control Panel" file on a separate floppy disk, used to adjust the parameters of the Prodigy SE. Copy this file into the System Folder, access the Control Panel, and a new option appears: an icon depicting the Prodigy SE circuit board. Clicking on this icon brings up a fresh Control Panel screen, with control options for the Prodigy SE. This screen allows the 68020 "Instruction Cache" to be toggled on and off, and, if your board is fitted with the 68881 co-processor, allows the 68881 to be enabled or disabled. At the bottom of the panel is an option for the "*MacWrite* 4.5 Sniffer"; *MacWrite* was written long before the 68020 processor was anticipated for the Macintosh, and this feature enables *MacWrite* to function within the new architecture of the 68020.

Aside from the special setting required for *MacWrite*, most applications tested with the Prodigy SE ran flawlessly.

Some Macintosh applications instantly bomb when run with the 68020 CPU. To counter this, Levco has engineered a process to disengage the Prodigy SE board and return the system to a standard Macintosh SE. To disengage the Prodigy board, begin by Shutting Down the Macintosh, and turn off the power. Hold down the "Interrupt" switch on the side of the Macintosh, and turn the power back on. Hold the switch through the start-up "bong" sound, and the Macintosh fires-off as a standard, no-option Macintosh SE.

For example, *Tempo* is one application that crashes instantly in the presence of a 68020 CPU. For power-users who rely on *Tempo*, simply disarm the Prodigy board, run your various *Tempo* macros, save the file, Shut Down and re-start the Mac as a Prodigy SE.

In terms of software compatibility, the Prodigy SE was amazing. The few applications that refused to run with the 68020, even with the 68020-cache and the 68881 turned off, would run just fine after using the "interrupt" switch to disable the Prodigy SE board. Surprisingly, many games would run with the Prodigy SE engaged—at a speed guaranteed to challenge any arcade champion!

RAM Disk

Part of the Prodigy SE package is Levco's Prodigy RAMDisk software, a recoverable RAM-cache application tailored to the needs of the 68020 CPU. The RAMDisk allows any combination of files and applications to be copied directly into RAM memory, enabling applications to be "launched" directly from RAM—a lightning-fast process.

The Prodigy RAMDisk can create create a separate file, allowing a certain configuration to be automatically started with the Macintosh's "Set Startup" feature. Since the RAMDisk is recoverable, files "saved" to RAM memory, but not yet saved on a disk, will survive a system crash ("bomb" message). Though the Macintosh is designed to perform a RAM memory check on startup (which destroys the contents of the RAM memory), the Levco RAMDisk software circumvents that memory check to protect the contents of RAM memory.

Benchmark Tests

The increase in processing speed for the Prodigy SE is dramatic, even for the casual user. Create a long document with Microsoft *Word* 3.0, touch the scroll bar, and the text instantly flies up the screen. Search for a single word, and it appears instantly. With the Prodigy SE, *MacLightning* was able to spell-check an 11,000-word document in 77 seconds—over 142 words per second. The same spell-check on a standard Mac SE required 242 seconds—about 40 words per second.

With the Prodigy SE, graphics applications, such as *Cricket Draw*, are much faster, enabling the high-speed scrolling of a complex image. For our evaluation, we tested a Prodigy SE equipped with two megs of memory and the optional 68881 math co-processor. Since Microsoft's *Excel* spreadsheet is designed to take advantage of a 68020 CPU/68881 co-processor combination, a sample spreadsheet was created, with 10,000 cells programmed to calculate the square root of a constant located in cell A1. When the constant in cell A1 was changed, a standard Macintosh Plus was able to recalculate the entire spreadsheet in 31 seconds. A standard Macintosh SE recalculated the same spreadsheet in 27 seconds (due to the different way the SE divides its work between the 68000 CPU and screen input). For the Prodigy-equipped Mac SE, the same spreadsheet recalculated in a mere seven seconds.

Next, we ran the standard Sieve and Whetstone benchmarks, compiled (by Consulair) in *Consulair Mac C*. All tests were conducted with System 4.0 and Finder 5.4, as recommended for the Macintosh SE, with Apple's RAM cache turned off. The Sieve test on the Prodigy SE calculated 1899 primes in 1.00 seconds; a standard Mac SE required 3.18 seconds. The Whetstone? The Prodigy SE clocked a whopping 638,297 Whetstones/sec, versus 7,249 Whetstones/sec for the standard Mac SE. A sixth-order Butterworth filter, compiled in FORTRAN, ran in 17 seconds on the Prodigy SE, versus 53 seconds for a standard Mac SE.

Other Considerations

Considering all the hot-rod speed available with the Prodigy SE, it figures that there would be a glitch or two with its operation. First of all, our Prodigy SE was one of the first batch shipped, and, on occasion, it would refuse to format blank 800K floppy-disks. Levco located the problem in their PROM chips two days later, and promptly supplied revised PROM chips which cured the problem.

The Prodigy SE is designed to be compatible with most SCSI hard-disk drives, but there a few (notably those that violate Apple's guidelines for external SCSI devices) that won't work with the Prodigy SE. At this time, General Computer's Hyperdrive, all SCSI drives from AST Research, and the LoDown SCSI hard-disk drives are incompatible with the Prodigy SE. Levco can supply software to re-format some of these hard-drives for compatibility with the Prodigy SE. It's likely that the manufacturers of incompatible drives will be scrambling to create revised formatting software, since drives that don't work on the Prodigy SE probably won't work on the upcoming Macintosh II.

Since the Prodigy SE electrically resembles the Macintosh II, software programs incompatible with the Prodigy SE's 68020 CPU will soon be re-written for compatibility. The existence of the Macintosh II ensures future compatibility for the Prodigy SE.

What it Costs

The performance improvements available from the Prodigy SE carry a substantial price tag, and will appeal to Macintosh professionals who can directly relate their earnings to their computer's processing speed.

The "base model" Prodigy SE includes one meg of memory, and the 68020 CPU. (By the way, the memory resident on the SE's motherboard is bypassed by the Prodigy SE: it is used only when the Prodigy SE is bypassed with the interrupt switch.) Levco originally anticipated offering this bare-bones Prodigy for $1995, but demand for the product has enabled them to lower the price to $1495. The 68881 math co-processor is available for an additional $300, and expanding the Prodigy to two megs of RAM adds another $500 to the package. Since the various components are literally plug-in modules, the Prodigy SE can easily be upgraded to suit future needs.

Analysis

Considering the ability to engage and disengage the Prodigy SE board, Levco's Prodigy SE represents the most powerful Macintosh computer available: more flexible, and more accommodating to existing Macintosh technology, than the Macintosh II. Any application that runs on a Macintosh Plus, but bombs on a Macintosh II, can be made to run on a Prodigy SE.

Another consideration is that Levco is an authorized Apple VAR (Value-Added Reseller), and can sell brand-new Prodigy SE packages, pre-installed and ready to run. This ability sidesteps the necessity of locating a technician to install the Prodigy SE, and the down-time associated with installation. In a corporate environment, one purchase order can be forwarded to Levco, and the equipment—with full warranty—will be shipped direct from the factory.

Equipped with the 68881 math co-processor for $1795, plus the cost of a new Macintosh SE, the Prodigy SE approaches the price of a Macintosh II. But the Prodigy SE is a unique product: a compact, portable computer that emulates the horsepower of the Macintosh II, while allowing total compatibility with existing Macintosh software. Simply stated, the Prodigy SE is an astounding achievement.

The bottom line is performance. Will you appreciate the performance of the Prodigy SE? Is it worth the expense? The best way to answer that is to spend an hour with a Prodigy-enhanced Macintosh SE. The experience is exhilarating, intoxicating—a definite threat to check-book and charge-card. Since Apple has positioned the Macintosh SE as a mainstream business computer, there's no doubt that the Prodigy SE will find its way onto desktops throughout corporate America. (Levco, 6160 Lusk Blvd. Suite C-203, San Diego, CA 92121, 619/457-2011.) □

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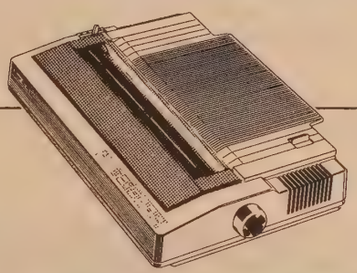

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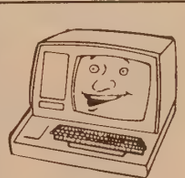

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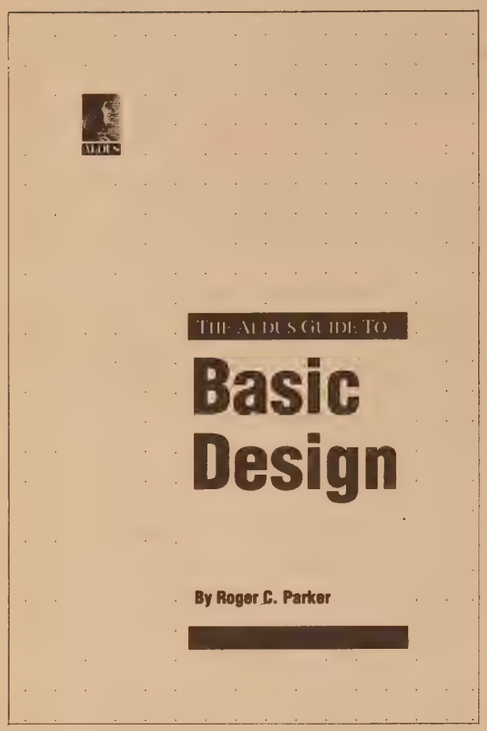

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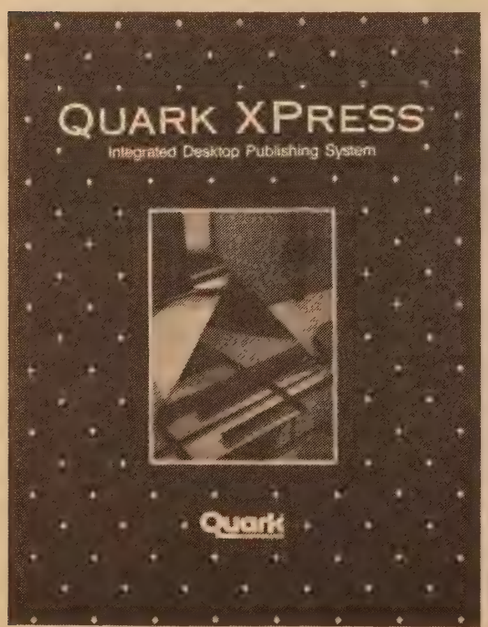

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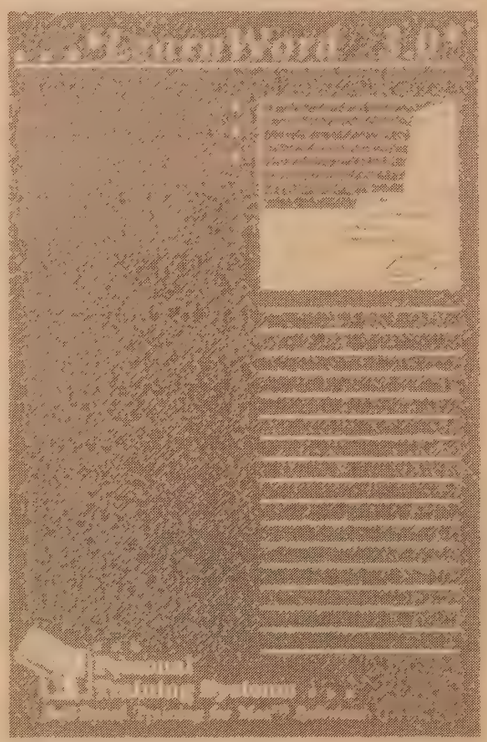
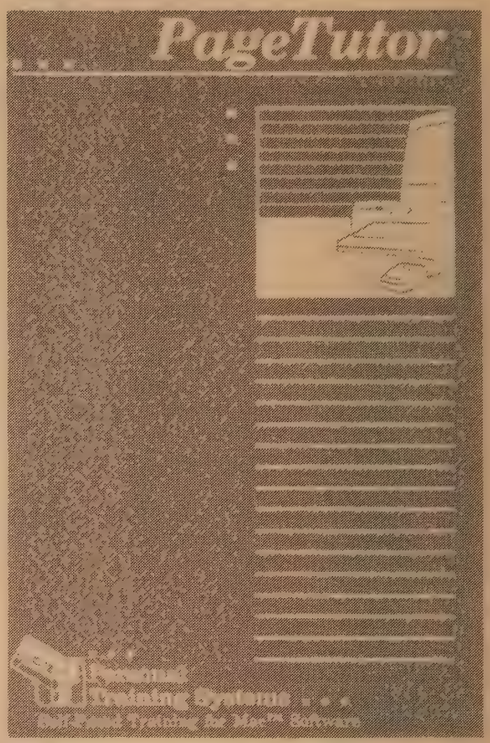
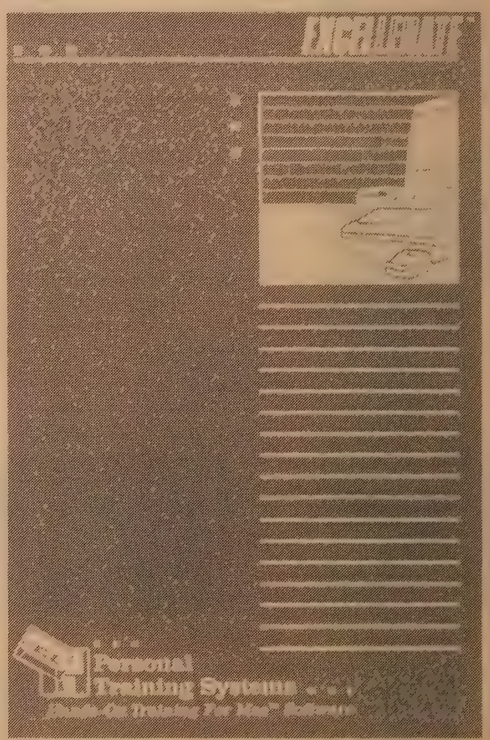
Stanford Professors Analyze Computers In Small Businesses

Computers In Small Business written by Russell W. Rumberger and Henry M. Levin, both of Stanford University, stems from a survey of 10,000 members of the National Federation of Independent Business (NFIB). The intent of the study was "...to examine the stimulants, reservations, means, and problems that small business owners encounter in the process of introducing new technology into their businesses."Published by the Institute For Enterprise Advancement. NIFB Foundation, 600 Maryland Ave., S.W., Suite 700, Washington, DC 20024.







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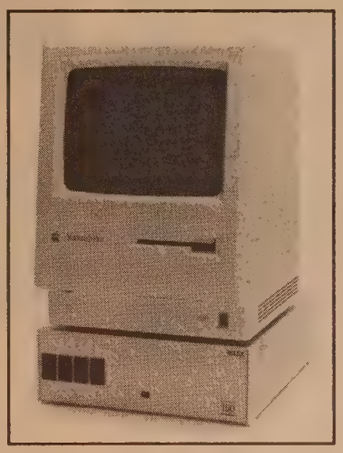

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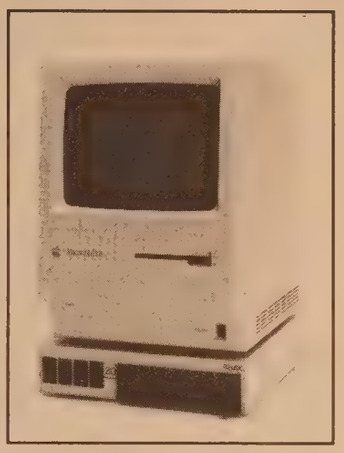

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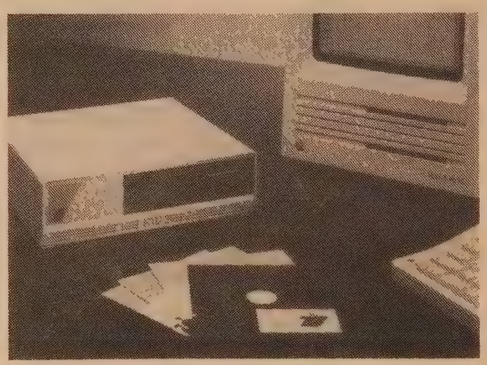
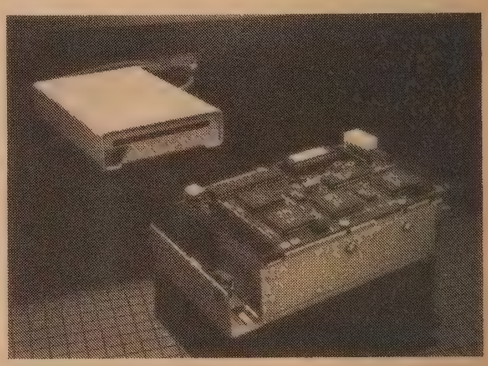
programs and data, many users can share one computer by simply inserting their personal 10MB disks. The drives can be used as a back-up device in place of a tape drive unit. The capability to read 1.2 MB IBM AT and 360KB IBM XT floppy disks in the Infinity drive provides a gateway to MS-DOS files ($1095). Peripheral Land, 47800 Westinghouse Dr., Fremont, CA 94538. (415) 657-2211.





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The Hapless User's Tale

By Bennett Falk

Once upon a time, the Hapless User approached a group of UNIX gurus and asked, "Does anybody, uh, know how to turn a text file upside down?" The gurus suppressed the urge to ask why any sane person would want to invert a file and went away to mull the problem over.

Most of them thought Hapless would need to write a program in C to do what was asked, but after a while someone came up with a single command line that looked like this:

```
nl -ba filename | sort -r | cut -f2-100
```

This is actually a series of common UNIX commands strung together in a pipeline.

Improbable as it may seem, this patchwork command is a pretty good example of how UNIX is used in daily life. Quite apart from its wonders as an operating system, UNIX contains over 200 utilities and a number of nifty features for combining such software building blocks to do more complicated jobs.

FUN WITH PIPES

The pipeline to invert text files uses three UNIX commands: "**nl**", "**sort**", and "**cut**". "**nl**" simply numbers the lines of a file, the "**-ba**" flag directs **nl** to number all the lines and not just the lines containing text.

"**sort**" is a general purpose utility that, in this case, is simply sorting the numbered lines produced by **nl** in reverse order (this operation is signified by the "**-r**" flag attached to the command).

Once the contents of the file have been inverted, the "**cut**" command is used to strip out the numbers that were added by **nl**: the "**-f**" flag tells **cut** to select certain fields in each line of input. The "2-100" argument indicates that **cut** is to return the second through the one-hundredth fields of each line of input. (One hundred was chosen arbitrarily; we were confident that no line would have more than one hundred fields in it.) Happily, **cut** uses the TAB character as the default separator, and coincidentally **nl** uses a TAB character to separate the line number it inserts from the text of the line.

The vertical bars in the command line above deserve some special commentary. They are called "pipes," and UNIX uses this symbol to indicate that the output of one command is to become the input for the command that follows.

Pipes are a convenient way to pass data between processes. Ordinarily UNIX commands have one source of input (known as "standard input") and two output streams. One of the output streams ("standard error") handles error messages and diagnostic information, the other ("standard output") handles the normal output of the program being run. Most of the time standard input is the user's keyboard; standard out as well as standard error are both sent to the user's display monitor.

In the above example the output from **nl** becomes the input for **sort**, and **sort**'s output becomes the input for **cut**. After typing in the pipeline, no further input is required from the user, and output comes to the screen until the **cut** command is finished.

In addition to pipes, which connect processes to each other, UNIX also supports "file redirection," which enables users to substitute a file for any of a command's input or output streams. The pipeline to invert a file could be modified to send its output to a file rather than to the screen:

```
nl -ba filename | sort -r | cut -f2-100
    > filename2
```

The "greater than" sign before **filename2** is a redirection symbol; the finished product of the pipeline described above will be stored in a file with the name "filename2".

Hapless marveled at this solution to the problem of turning files upside down and asked the guru how she had done it. The guru smiled wryly and muttered that she had simply browsed through the UNIX Reference Manual until a strategy suggested itself.

THE PLUMBER'S FRIEND

Hapless went away much enlightened, but soon discovered that working with an operating system that thinks of itself as a toolbox can be frustrating—it's not always clear where to look to find the facilities you need. After one particularly aggravating session with a public bulletin board, Hapless was heard to cry, "This computer is brain damaged. At least when I use my PC to call other computers I can keep a log of the session in a disk file."

The gurus hemmed and hawed and explained "**cu**" to Hapless. "**cu**" is the utility UNIX provides to call other computers, and it's true that it has no built-in command to log a modem session to a disk file.

"I know that," snapped Hapless, "but isn't logging a modem session to disk a simple matter of redirecting the output of the **cu** command to a disk file?"

The gurus knew immediately that Hapless had tried something like:

```
cu systemname > logfile
```

Here **cu** is being used to call "**systemname**" and the output of that command is being stored in "logfile".

"This is true, as far as it goes," the gurus replied, "but the redirected output will go straight to the file and won't appear on your screen during the modem session. You will still be in control of **cu**'s input, but that's practically worthless without being able to see what's happening."

"I know," cried the anguished Hapless.

"To log a modem session, standard output needs to be sent to both the terminal and a disk file," the gurus replied nonchalantly. "The **tee** utility is provided to do exactly that:

```
cu | tee -i logfile
```

"The output from **cu** (which is basically your working session on a remote computer) is piped to **tee**, which saves that output in a file name "logfile" and displays the output on the screen. The '**-i**' flag tells **tee** to ignore interrupts, keystrokes in its input which might otherwise stop the command. This flag is needed because the remote computer might require some keystrokes that UNIX would ordinarily interpret as signals to exit or quit."

Notice that what started out as a complaint about **cu**'s lack of features was resolved without going back to the source code and rewriting **cu**. The gurus applied the tools UNIX provides to supplement a program's built-in features.

LIFE WITHOUT HARDWARE

After many months of trouble-free use, Hapless was one day heard to moan, "Ack! All these directories are a trap! I've been making files and subdirectories all this time and now I have to move them and it will take hours to make the new directories, **cd** into each of the old directories and copy the files to the new locations."

Hapless could, of course, go to the system administrator and demand that the directories that need to be moved be restored from a backup tape, but the system administrator already has more than enough to do and is known to have limited patience with Hapless.

Thinking one step further, Hapless could simply ask for a tape and copy all the files and directories to the tape with one command (say, "**tar -c directory**") and then move to the new directory and extract the files and directories from the tape with another command ("**tar -x**"). This would work, because **tar** will take the directory named on the command line—and all its contents including any subdirectories—and copy them to and from tape. But tape drives are notoriously busy when you need them, and reading and writing tapes can be a real burden on the system.

The gurus, however, tapped Hapless on the shoulder and whispered, "Leave the tape drive out of the process altogether, use this!" A crumpled paper was stuffed into Hapless' hand. Opening it, he read:

```
tar -cf - dirname | (cd newdir; tar -xf -)
```

In this pipeline "**tar -c**" is writing its archive to standard output, and this is being piped directly to another **tar** command which is extracting files and directories from the stream of data presented to it by standard input. Because the files need to be moved from one place in the directory hierarchy to another, parentheses are used to make sure a command to change to an appropriate directory is executed before the **tar** extraction command.

This command grouping works because the "**cd**" command needs no input from standard in and is executed first. The output of **tar -c** passes through the pipe directly to **tar -x**, the first command in the group looking for any input from standard in.

Hapless used the command the gurus gave him, and it worked. Once he had verified its success, he was careful to remove the original copies of his files and directories with a simple "**rm -r**". A week later the system administrator inquired condescendingly if perhaps Hapless needed some assistance in relocating his files. He smiled benignly and just said "No." □

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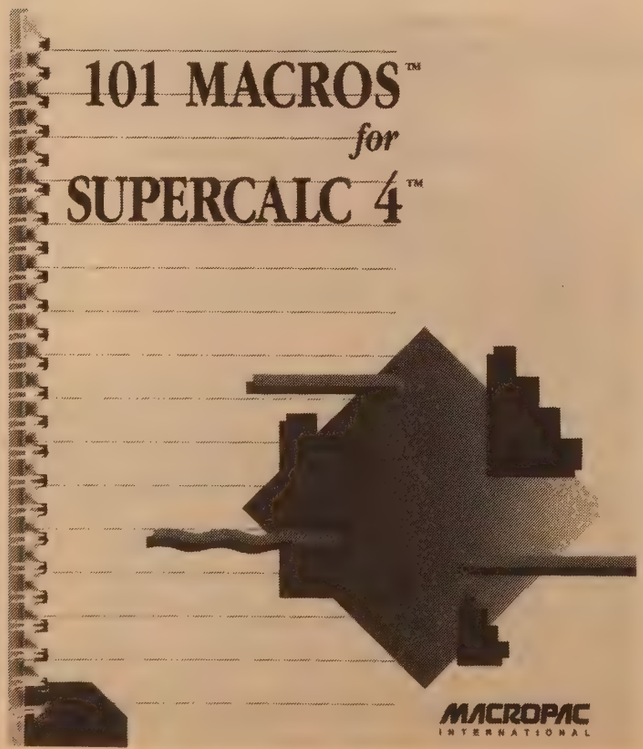

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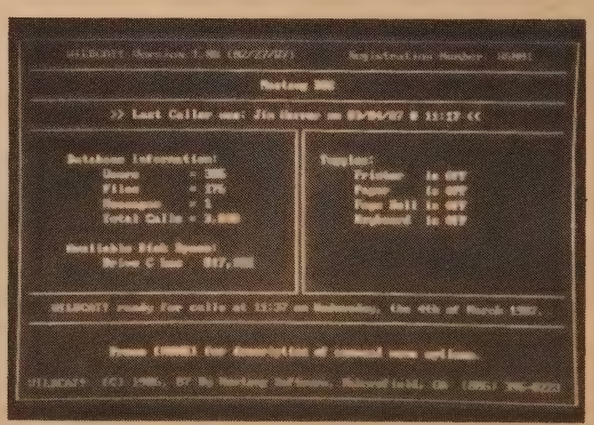

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By Mary Eisenhart

Here Comes The FCC Again Or, Modemers On The Warpath

By Mary Eisenhart

Before we get to this month's happenings out in user group land, a crisis is looming that threatens to have dire effects for all of us who use modems, assuming any of those modem calls go across state lines. You'll hear more about this from the intrepid **Brock Meeks** in his next column, but meanwhile time is of the essence.

On June 10, the Federal Communications Commission issued a proposal which calls for assessing charges of about $5 per hour for services offered by packet-switched networks, such as those offered by **Telenet** and **Tymnet.** These networks are currently exempt from such charges. The change is scheduled to take effect on January 1, but is required to go through an extensive public comment phase. That means the time has come for the likes of us to speak up. Loudly.

Rather atypically for such matters, this issue is being extensively discussed in print media including the *New York Times* and the *Wall Street Journal*. And needless to say, the nets are abuzz with outrage and argument, from the big nationals like **CompuServe** and **The Source**, which anticipate a considerable increase in costs to their users if the plan takes effect, to regional systems like **The WELL**, where a surprising number of users log on from out of state.

The WELL is, in fact, resounding with howls of outrage. **Brett Glass** and **George Por** have started topics in the telecommunications conference to discuss the issue, eliciting a variety of comments. Says user **Louis Jaffe**, "I managed to run up a $275 Telenet bill doing my daily bit on the WELL — without any $5/hr. access charge. This thing *can't* go through."

Brett and others advocate a vigorous letter-writing campaign (c'mon, put that mailmerge to work...). Says he, "Time to write the FCC again, particularly Chairman **Dennis Patrick**, and be emphatic about what a catastrophe this would be for all of us. The other commissioners are **James Quello, Mimi Dawson** and **Patricia Diaz Dennis** (there is still an unfilled seat vacated by chairman emeritus **Mark Fowler**). Write them all!"

Dave Hughes, operator of Colorado's Chariot board, retired Army colonel, computer populist and scourge of local politicians, retorts, "Letter writing, hell! It's time to deluge the Commissioners with telegrams, the *Wall Street Journal* with letters, Congress with cries of foul, and organize a **Modem March on Washington** so big every TV network carries it for about a week.

"Now let me see. Suppose we get 500 modem users to assemble in front of the FCC building in Washington, DC, after informing the Big Media of course. And then demonstrate, each holding a modem aloft. And with everyone wearing old tattered clothes march round with banners proclaiming something about "STOP MAKING THE INFORMATION POOR," "MODEM ACCESS FOR ALL," "OUR CHILDREN MUST BE ABLE TO LOG ON!" Oh I think we could — with a little imagination — get quite a bit of national attention.

"Come to think of it," he adds, "White House Chief of Staff **Howard Baker**, so long a user of The Source for both tracking his kids in college and linking with his home state of Tennessee as a Congressman, that he was in their national advertisements, would probably grasp this issue quicker than anyone. 'Hello FCC Chairman, this is Howard Baker calling. Have you got an e-mail address?"

Whatever response you'd care to make to all of this, the time to do it is *now*. Write the FCC:

Office of Opinion and Review
The Secretary
1919 M Street NW
Room 222
Washington, DC 20554.

Refer to "Interstate Access Charges Exemption for Enhanced Service Providers CC Docket 87-208." According to Brock, copies of this document can be obtained by calling the FCC at (202) 632-7000. Write each of the FCC commissioners individually at the same address. Write your Senator and/or Congressperson.

And if you'd care to check out (or participate in) some of the online discussion of this issue and its theoretical underpinnings, you'll find it on just about any network these days, from USENET to The Source and CompuServe to BIX. If you'd like to access Dave's Chariot system in Colorado, where discussion is *always* lively, dial (303) 632-3391. And this would also be a great time to leap into The WELL (415) 332-6106, where argument rages in Topic 54 of the Telecomm conference and George Par is diligently posting comments he's gleaned from the many nets he frequents in Topic 55.

Clambering down from the editorial soapbox...

Time for News of the Month, short version.

Good news for CP/M users — you have a new resource in **The CP/M Connection**, a BBS in Hayward which runs 24 hours a day at (415) 886-4734. Says sysop **Mike Lipschutz:** "This bulletin board is dedicated to the many computer users with Digital Research operating systems, such as CP/M-80, CP/M-86, Concurrent CP/M, Concurrent DOS and Echelon's ZCPR3. We hope all you CompuPro, Kaypro and Morrow users find The CP/M Connection a useful service in the professional community."

Due to a momentary lapse on somebody's part, we neglected to provide the contact information for the **OSAS User Group** in Southern California. You'll recall that this group is being formed under the auspices of **Micro Computer Consultants** to promote the understanding and use of Open Systems Accounting Software — if this sounds like something you need to know about, call (213) 452-1335.

Macintosh BASIC fans in the Bay Area might want to check out BAMMSBUA, the **Bay Area Mac MS BASIC Users Anonymous. Ted Jones**, our correspondent from BAMMSBUA, characterizes the group as "a high-level users group devoted to the Microsoft dialect of BASIC for the Macintosh." He suggests you call him for more info at (415) 826-9239.

Mark Butler of DACE, the **Diablo Atari Computer Enthusiasts**, writes in with an update on this long-established group, which has recently expanded its by-laws to include support of all Atari computers by such methods as a disk-of-the-month program for both 8-bit and 16-bit Ataris. "Many of our members produce original public domain programs which are seen nowhere else," says Mark.

He adds, "One thing that I think sets DACE apart are the people. Several people have come up to me expressing dissatisfaction with the way some clubs are run. They get the feeling that the clubs are run like a corporation, always money hungry and impersonal. But these same people tell me they get a very good feeling about DACE. We do not have a big budget, but everybody pitches in. I have been president of DACE for six months now, and I am having a blast. DACE is not the biggest group in the area, but I think it is the best." Atarians, check it out. Mark recommends that interested parties call **Big Mike** at (415) 798-6565.

Meanwhile, in scenic Sylmar, **David Nussbaum** reports that the **Consolidated Computer Club** has moved to new quarters. Meetings are now held at the Life Support Association, 13741 Foothill Blvd., Sylmar. (He also seems to suggest that there aren't any meetings till September, so it might be best to check for meeting times and dates. You can write him at 14200 Polk Street #53, Sylmar, CA 91342-2966, or call him at 818/362-9718.

That's about it for now — this column should resume its general format of local happenings next month. But in the meantime, write the FCC...And us, of course. Send e-mail to **microx** on The WELL (415/332-6106) and US Mail to User Group Network, 5951 Canning Street, Oakland, CA 94609. See you next month! □

BULLETIN BOARDS

065

Remote Bulletin Board. (065) 242-7669 (Singapore). 24 hours, N-8-1, 300/1200/2400, UL/DL 67 meg. Sysop: Umar A. Rahman.

206

The Board Of Review. (206) 361-8018. 300/1200 baud, 8-N-1, 24-hours, Commodore. Sysop: Ron Strauss..

28 Barbary Lane. (206) 323-2828. 300/1200 baud, 8 bits, 1 Stop Bit, Full Duplex, No Parity, 24-hours. Sysop: Mrs. Madrigal.

209

Region 7 TEC Center BBS. (209) 571-5085. Specializing in music and schools. 24 hrs, 300 baud. Sysop: Dan Guerra.

Inn Finity BBS. (209) 521-6240. Inn Finity is an Atari based BBS. Operates on a 130XE with 320K. Signalman 300/1200/2400 baud, 24 hours a day. ATASCII—ASCII. Sysops Buzz and Jann Kelley.

Bullseye BBS. Stockton, CA. (209) 474-FIDO. IBM and compatibles. 300/1200/2400 baud. Open 24 hours, 8-N-1, FidoNet 161/31 Valley PCUG. Sysop: Bob Loeber. Validation required. Lots of MS-DOS shareware.

The Spotlight BBS. (209) 368-5591. 300 baud, 24 hours, 8-N-1, dual drive Commodore 64 operated. Sysop: The Spot.

Bertha Board. (209) 239-9853. 8-N-1, 300/1200/2400 baud. 24 hours. MS-DOS oriented, with emphasis on programming source code. Free. Sysop: Ken Roach.

Motherload-64 BBS. (209) 754-5530. 8-bit, 1 stop, Punter and X-Modem, D-load, 9:30pm to 6:30am only! 300 baud. Motherload-64 is run by a programmer who is also a

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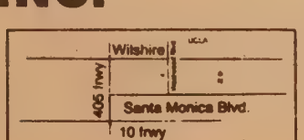

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Bulletin Board System. BBS devoted to handicappers and racing fans in So. Cal. On line every weekend. Log-on: race data for Santa Anita, Hollywood Park and Del Mar. (213) 934-6026.

Videodrome BBS. Where computers and video meet. (213) 324-5882. Open weekdays 4 pm - 2 am, weekends 12 pm - 2 am. A Commodore 64 system.

HUG1. The official BBS of the Hollywood Commodore User Group (HUG). All HUG members and visitors are welcome to drop by. (213) 874-8256.

The Wargames RBBS. Call for one of the best IBM RBBS around, running with the latest merge for RBBS-PC. Win free time weekly with secret password. Features include the latest PC news, special news reports, BBS listing, messages, e-mail, downloading/uploading, color/music online. Best of all, it's FREE! Operating 24 hours a day at 2400/1200 baud. NO 300 BAUD ALLOWED! Sysop: Jason Lin (213) 393-9777.

International Collectors Network. Coins, stamps, baseball cards, books, records, antiques and anything collectable can be bought, sold, or traded on the International Collectors Network BBS. Regional lists of collector events and shows in many categories. Also names and addresses of many collector organizations. Accessible using PC Pursuit. Data phone available 24 hours, 7 days at 300/450/1200/2400, 8, N,1. (213) 204-0646.

The Computer Consultant's Network, (213) 479-4074. Running a modified version of Martian! Software. 24 hours a day. This is not a job board, but merely a place for computer professionals to network and share information.

Computer Conference Center. (213) 212-5267. TBBS w. Commodore, IBM, TI, Atari, Epson, Apple etc. sub-boards. Large DL with CP/M, MS-DOS and TR-DOS programs. Laurie Flood, sysop.

Hughes Aircraft Message Service. Uploads and downloads for Mac, IBM, Commodore, Atari, etc. Public message boards. (213) 549-9640. 300/1200, 24 hrs., 7 days.

Monolith-1.7 great public boards, private electronic mail, social events. (213) 659-JEDI. 24 hours, 1200/300. Sysop: Erik Goldman.

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Bloom County "Nochange" BBS. (213)615-0528, 8-N-1, 24 hours, 7 days, 300/1200 baud. Bloom County is an IBM BBS running Nochange software. This system features online games, file uploading/downloading and the best e-mail system around! Call and join our Quarton-The Later Years D&D message base. Sysop: Brody Schiess.

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LAAUG-LINE. (213) 559-7367. 300/1200, 7 days a week, 24-hours. Sysop: Gary Woolard.

Hollywood Commodore User Group Hug #1. (213) 466-3049. 8-bit, no parity, 1 stop, 24-hours, 300-1200 baud, running on C-NET. Sysops: Joss A. Vazquez & Zed Yago.

Alinco Ind. RBBS. (213) 402-4716. 300/1200/2400 baud, N-8-1. Upload and download of public domain files. E-Mail, conferences: games, communication and technical references, systems and peripherals price list. This is a totally new board. Sysop: Albert Chang.

Long Beach AIDS Information BBS. (213) 663-2025. 24-hours, 300/1200 baud. Information on AIDS issues, especially experimental drug therapies. Also serves as a forum for discussion. Sysop: Ken Ragge.

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CompuCenter/LA. (213) 435-3757. 8-N-1, 24 hours, 300/1200 baud. Multi-user board including conferences for Amiga, IBM, C64, C128, TRS-80. Reviews on software and hardware. For Sale section and much more. Up/Downloads section for all listed. Sysop Rick Gaspa.

312

Feminist BBS. (312) 225-9138. 8-N-1, 24 hours, 300/1200 baud. Feminism, women's issues, general talk. Sysop: Susan B. Anthony.

408

Atari Base BBS (408) 745-5308 or (408) 745-2642. 300/1200 baud, any time, any day. The official BBS of Atari Corp, for all Atari computers.

Byte Bandits ColossusNet. (408) 374-3974, 300/1200, 24 hours. Network USA. Sysop Sam C. Brown.

Bizcomp BBS. Sunnyvale, CA (408) 720-9212, 300/1200, 24 hours. Message base specializing in modem technical help, with a special message conference for sysops. No file transfers available. No registration fee, but requires home & business phone numbers on first call.

Non-Smokers BBS. (408) 298-4277, 298-GASP, 8-N-1, RBBS PC, 24 hours per day, 300/1200 baud. Sysop: Ed O'Dwyer. Features non-smoking areas in restaurants and hotels, health info, diner's conference, messages, public domain software.

Home Board (408) 277-0106 no fee. A non-profit BBS focused on housing issues in Santa Clara County. 1200 baud, 24 hours M-F (8 am Monday through 5 pm Friday). Sysop: Charlie Chew.

Board III (408) 985-7573. 300/1200 baud, 24 hrs., 8 bits, no parity. Board III is an ongoing experiment in telecommunications. Atari-based, but all computers welcome. Sysop: "The Chairman."

ADV in Lrn (408) 247-4769.

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Bulletin Board Hewlett-Packard BBS. Features HP-current events and user information. 24 hrs., 300-1200 baud, 7 bits, odd parity, 1 stop. NO FEE. (408) 747-1243.

The Man O'War, (408) 243-2370. 24 Hours, 300/1200 baud. Over 52 message bases, organized activities. A member of the Silicon Valley Sysop's Exchange.

Silicon Valley Sysop's Exchange. Merlin's Castle BBS (300 baud only), (408) 578-1563. Sharks Head BBS (300/1200 baud), (408) 247-4810. The Man O'War (300/1200 baud), (408) 243-2370.

SDI Clearinghouse BBS. Morgan Hill, CA, (408) 778-3531, 300/1200 baud, 24 hours. Supports the L5 Society in promoting the development of space.

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MicroTimes is a free computer magazine with a current monthly circulation of 140,000 copies per month in Northern and Southern California. We offer a free listing service to user groups, bulletin boards and computer associations. Let us hear from you. Use this coupon for your listing, and feel free to include additional information for our monthly user group column. Please send us your listing by the first of the month *preceding* the month in which you want your first listing to run.

We will run your listing as space permits until you tell us to stop, or until it's obviously obsolete. Please keep us posted on changes as they occur.

☐ **USER GROUP**

Group name _____

Meeting address _____

Meeting time and day _____

Contact name _____

Address _____

Phone number _____

☐ **BBS**

Name _____

Number _____

Parameters, operation hours, baud rate _____

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Sysop _____

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Mail to: **MicroTimes User Group Listings**
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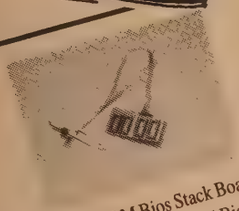

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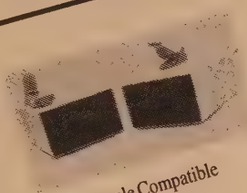

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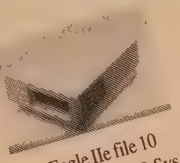

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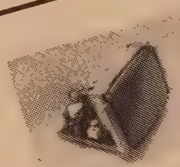

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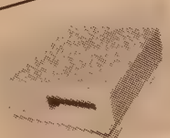

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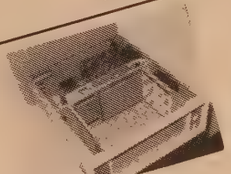

Intel Multi-Bus
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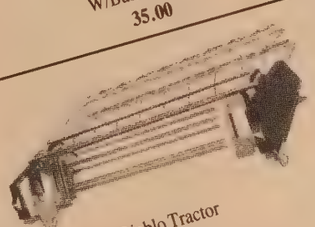

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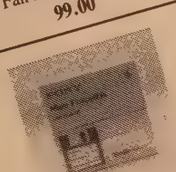

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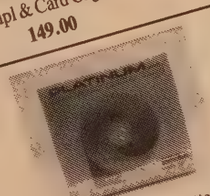

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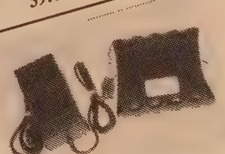

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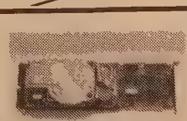

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SOFTREK. (408) 438-6506. 8-N-1, 24 hours, 300.1200 baud. Sysop Mike Floyd.

Hotel California. (408) 942-1081. 24 hrs., 300 baud, Commodore oriented.

The Flying Fido. Fido network 143, node 23, is now up and running 24 hours per day, except during FidoMail. 300/1200 baud, (408) 946-3183. Special interest in aviation; ul/dl of pd software. Free.

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The Snake Pit BBS. (408) 266-5895, 300/1200, full duplex, 8 bits, no parity, 1 stop, 24 hours. Commodore ul/dl.

WYRLD WYRM BBS. Role-playing games, computer games, and science fiction. Open access, everyone is welcome. FidoNet node 143/12. 9 am- 6 pm weekdays, 10:30 pm-6 am every night. 300/1200 baud. Robert Plamandon, sysop. (408) 263-8134.

Tele-Play. (408) 723-9003. 24 hrs, 300 baud, program matches parameters. Sysop: "Titan."

Consumers BBS and Insurance Center, Sunnyvale. (408) 732-4126, 300/1200 baud, 8-N-1, 24 hours. Rate your own home and auto insurance with one of the nations's top 5 insurance companies. Apply for a car loan with Lloyd's Bank. Get the Dealer's cost on new cars. See if your auto has been recalled. Buy or sell a car. Free, no passwords, no time limits. Sysop: Al Moskal.

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Computer Tyme. (408) 732-2187. 300/1200, 24 hours weekends, 7 pm-9am weekdays. Sysop: Gary Araki.

Gino's. (408) 371-2703. 300/1200, Commodore UL and DL. Sysop: Porkchop.

The PET Sematary. (408) 263-3486. Commodore specific, X-Modem, Punter files, XSee. 300/1200 baud, 8-N-1, weekdays 5 pm-10 pm, weekends 10 am-10 pm. Sysop: Grave Robber.

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Comp-U-Ease BBS. (408) 286-8332. 300/1200/2400 baud, 24 hours, 8-N-1. IBM and Atari ST oriented. No fee, dBASE SIG, lots of downloads. PC Board utilities. Sysops: Stuart Smith and Eric Smith.

Professional Software Programmers Association. 830 Bay Avenue, Suite G, Dept. F, Capitola, CA 95010. A 24 hour service and support bulletin board for computer professionals. (408) 462-2829. 8 bit, no parity, 300/1200/2400 baud. No fees. Product reviews, professional job registry and consulting registry services. Ask for copy of the Association's free monthly newsletter and membership information packet.

The Dynamic BBS. (408) 972-9750, San Jose, 22 hours, 7 days, maintenance 5-7 pm daily. Registration required. Features: contests and prizes, 100 meg of d/loadable files and more. Coming attractions; multi-lines, on-line programs and games, multi conference areas. 1200/2400 baud, with limited access to 300 baud users. Sysops: Terry & Sharon, The Dynamic Duo.

The Portal System™. (408) 725-0561, 300/1200/2400 baud, 8-N-1, 24 hrs. Features USENET Int'l. Net w/250+ conferences including IBM, Apple, Mac, Atari, CP/M, Unix, social topics, cars, cooking and gardening. UUCP, BITNET mail access. Live chat shows every night. Say you saw it in *MicroTimes!*

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Perigrine Data Systems BBS. (408) 997-6254, 24-hour, 1200/2400 baud, PC board. PC based BBS, no fee. Features PC public domain software for DOS utilities, games, C and Assembler source, business and printer utilities. Conferences dedicated to DOS, communications, UNIX and PereLine technical support. Sysop: Einar Pedersen.

The Campbell BBS. (408) 379-4830. 3-2400 BPS, No Parity, 1 stop bit, 3/12/2400, N-8-1, 24-hours. No registration required, immediate access, MS-DOS-others, includes suport for "Bob's Term-Pro" terminal software. Sysop: E. Munson.

National Computer Club BBS. (408) 866-2670. 300/1200 baud, 8-N-1, 24-hours, 7 days a week. IBM and Apple II software, shopper service, 2 conference lines: general and adult BBS listings, UL/DL. Membership required for major functions. Sysop: Michael McCake.

Timex/Sinclair Users Of Silicon Valley BBS. (408) 735-7390. Public Domain Software Exchange. 300/1200 baud, 8-N-1, 24-hours, 32 lines. No waiting!

Apple Blossom User Group (ABUG) Let's Talk Line. (408) 227-3993. 24-hours. Sysop: Ron Horio.

THE PLACE. (408) 732-2340. 3 lines, 300/1200/2400 baud, 24 hours. We're THE PLACE with over 15 message/SIG bases (most open, some private) and online games. Over 50 megs just for downloads. Updated daily! And if that isn't enough, we are THE PLACE for wholesale costs on computers and peripherals. Do you or your group need a place to be? Make this THE PLACE! Sysop: Doug Smith.

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The Bay PBBS 300/1200 Baud full duplex. 24 hrs., 20 megs online. Apple super-32 computer section, excellent Macintosh/Apple II downloads. (415) 775-2384. Easiest to get through in the mornings.

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BAKUP (Bay Area Kaypro Users and Programmers) (415) 223-2237 RBBS & RCP/M. Must be a member of BAKUP, P.O. Box 20181, Oakland, CA 94620.

MBL Referral System BBS A board dedicated to personal messages and advertising listings. Modem: (415) 444-6362; 6 pm - 6 am weekdays, 24 hours weekends. MBLRS BBS users meeting Saturdays, 5:30 pm, 1555 Lakeside Drive, Suite 23, Oakland. Call (415) 444-3033 for info, ask for Mel.

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ROOTS BBS. Available 24 hours, 7 days a week, supports 300/1200 baud at 8/N/1. Specializes in genealogical info with messages, upload and download of CP/M, DOS, Apple software. Sysop: Brian Mavrogeorge. (415) 584-0697.

Welch Net II. A public FIDO BBS. Message areas devoted to Turbo Pascal programming and Seequa Chameleon computers. Available 23 hours/day. (415) 664-2811.

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Bay Connextion BBS (415) 621-7561, 9pm - 9am. 300/1200 baud at 8/W/I. Macintosh Software, Classifieds, Personals, Sexual Freedom, and Star Trek. Claude Wynne, sysop.

Earth-Rite RBBS. We specialize in Earth Religion and related topics. We are not a software exchange. (415) 651-9496. 24 hrs., 300/1200 baud.

MacQueue BBS (415) 661-7374. 100% Macintosh BBS with 8 megs software for download, message base, and FidoNet Mail (Net 125 Node 2). Instant access, 24 hours, 300/1200/2400 baud. See you on the Q!

MacCircles BBS (415) 484-4412. 24 hours, 300/1200 bps, Mac/Lisa downloads, message base, E-Mail.

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Low Overhead BBS. User-friendly BBS, 24 hours, 7 days a week. IBM software, motorcycles and motorcyclists. (415) 763-6794 or (415) 835-9959.

Guideboard, Cabbie's Guide to San Francisco. Where to go for restaurants, doctors, auto repair, etc. The sysop gets his tips from driving a cab; the callers furnish the rest. The BBS also has an resident astrologer, Swami Tommy. The Swami gets his tips from the stars. Ask him any question. (415) 864-3858, 300/1200 baud.

Entrepreneurs BBS: Official BBS for Community Entrepreneurs Organization (CEO), and XT Compatible Club. 1200/300 baud. 24 hours, 20 megs., 8 bits, no parity. Entrepreneurial networking and information, brainstorming, and on-line support for IBM XT clones. Sysop Edwin Rutsch. (415) 552-9070.

APT Action BBS. C64 board dedicated to exploring on-line entertainment. Free ACTIONAUT software. 24 hours, 300 baud, (415) 322-3213.

RSVP BBS. (415) 659-9169, 300/1200, N-8-1. 24 hours. Sysop Jim Thomas. FAUG Amiga User Group discussion and file area, Dr. Who forum, Sanyo, IBM, CP/M files, CP/M forum, Ohlone College forum.

Marin Community BBS (415) 459-3326. 300/1200 baud, 6 pm - 10 am M-S, all day Sunday. 520 ST/Atari information. Sysop Dave Powers.

MacCircles EBBS (415) 484-4412. 24 hours, 300/1200/2400. Running Red Ryder Host software on a Lisa 2/10 (Mac XL). Large software exchange, private mail system, public messaging.

Musician's Network BBS. Musician's information exchange. Space for want ads, bulletins, and public mail. Uploading and downloading available. BBS operates on Fido Software. 8 bits, no parity, 1 stop. Weekends only, 6pm Fri-6am Mon. (415) 893-1618. Sysop: Erik E. Hayles.

520 ST Atari BBS (415) 783-5545, 24 hours, 7 days a week. 300/1200, 8 data bits, 1 stop bit, no parity. Official Sixteen Bit Atari BBS of the San Leandro Computer Club, this system offers full support for all Atari ST system users. Currently running on a ten megabyte hard disk system, the system has many special interest areas including graphics, C, Pascal, LOGO, Basic, MIDI / music, communications and more. Supports four types of XModem/Modem7 and Kermit protocols. Call today! Sysop: Michael Curry.

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AIDS Information BBS (415) 626-1246. 24 hours, 300/1200 baud. Sysop Ben Gardiner. Free. All welcome. Statistics from Atlanta and San Francisco displayed, updated regularly as received. Sample Q & A about AIDS, based on clinic and phone exchange experience. Mail send/receive on AIDS; please not on other subjects due to limitation of one phone line. Please also no more than one hour per day. Mobilization Against AIDS information here. Calls to this BBS never disturb anyone.

Actrix Enthusiasts RBBS / RCP/M (415) 968-1783. 300/1200 baud, 24 hours, Free. Registration required. 46 megabyte CP/M system. In Mountain View. Sysop: Andy Bajka.

BBS-JC Just Computing. (415) 961-7250, 7E1/8N1. 24 hours/7 days, 300/1200/2400. Amiga and CBM public domain software. If it's new, see it here first! 8 sections including Commodore announcements are currently in operation. This board is especially for "Silicon Valley" Commodore users. Sysops: Thad Floryan and John Cronin.

Bug's Net HP. This bulletin board has over 20MB of PD software available. Message areas include HP300, IBM PC Technical and consultants forum. Fido node #10/777 (pending). 300/1200/2400 baud. 24 hours. (415) 236-1823. Sysop: John Buginas.

Professional Software Programmers Association. 830 Bay Avenue, Suite G, Dept. F, Capitola, CA 95010. A 24 hour service and support bulletin board for computer professionals. (408) 462-2829. 8 bit, no parity, 300/1200/2400 baud. No fees. Product reviews, professional job registry and consulting registry services. Ask for copy of the Association's free monthly newsletter and membership information packet.

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Draco-Net Prime. (415) 474-8608, 300/1200. Official BBS for: A+ Magazine, International Apple Core, San Francisco Apple Core, Apple Three Users of Northern California, and Carrier.™ 24 hours, no fee. Leonard Reed and Jono Smith, Sysops.

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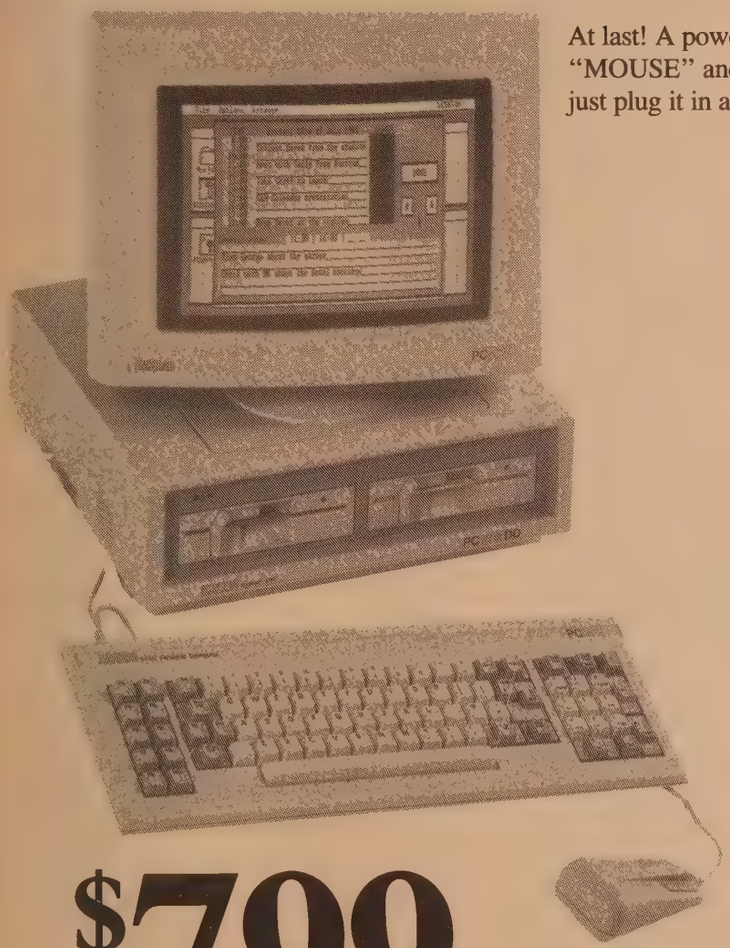

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Vaudeville Local. (415) 337-8693. 24 hours, 8-N-1, 300/1200. Vaudeville Local is a BBS dedicated to vaudeville and circus arts. Sysop: Arthur Conway.

Crossroads BBS. (415) 968-9341. 300/1200 baud, 8 bits, no parity. 24 hour operation. File transfer for IBM/compatibles, Commodore 64. Message bases include space travel, singles, political dissent, sexual freedom, stories, poetry, musician's referral, programmer's corner, adventure gaming. No fee. Mike Macgirvin, sysop.

LaserWriter BBS. (415) 261-4813. 300/1200 baud, 24 hours. BBS dedicated to desktop publishing. Sysop answers all related questions. Located within Allen Computer Graphics, desktop publishing specialists. Files, messaging, user groups, e-mail. Upload direct for LaserWriter printout or to order other products offered by Allen Computer Graphics. Macintosh and other computers welcome. Sysop: Tom Allen.

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Programmer's Circle. (415) 239-1722. 8-N-1, 300/1200, weekdays 3 pm-11pm. The Programmer's Circle specializes in carrying source code and tools to aid the programmer. Special attention is given to the Macintosh and Apple II computers, but all computer users are welcomed. Data files are online for the Mac and Apple II computers. Sysop: Roger Gibby.

The Live Wire. (415) 540-0529. 300/1200, 24 hours. A digital magazine for the graphic-arts community (printers, typesetters, self-publishers, artists). Free. Sysop: Rick Hepting.

SIGSIG BBS/RCP (formerly MEBBS) is back online! Member of the FOG and PRACSA networks. Supporting CP/M and MS-DOS public domain software and a public-access message system. No fees, novices welcome. Online registration for FOG, PICONET and PRACSA members. 24 hours, 300/1200/2400 baud. Sysop: Jim Switz. Located in Mountain View. (415) 968-7369. Call today!

Cold Moon On A Single Star. (415) 668-6101, San Francisco. 24 hours, Fido board. Chinese culture, history, language, Chinese cooking, discussion, etc. Asian community events. Sysops: Joseph Puig and Susan Chen.

Dr. Don's TBBS. (415) 885-1973, San Francisco. 300/1200, 24 hours. CarTalk and SportsTalk discussion and special interest boards. Private e-mail. All automobile sportscar enthusiasts, sports fans, softball-baseball-football players are invited to call. Sysop: Dr. Don. Co-sysop: Bimmer Pilot.

Centerville RBBS. (415) 793-3037. 300/1200/2400 baud, E-7-1 or N-8-1, 24 hours daily. Sysop: Joe Halbleib.

The Board. (415) 652-8277. 1200/2400 baud, 8-N-1, 24 hours. Public and private conferences, technical support. For AT&T and compatibles; AT&T PC support conferences. Associated with Bay Area AT&T PC6300 Users' Group. Sysop: Troy Blackburn.

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Trading Post BBS. Information Exchange system, (415) 948-4163. Open system with more than 20 discussion groups covering everything from Atari to ZCPR3. Online games and 200+ articles. Free. Sysop: Lars Rosengreen, a.k.a. Eskimo.

SPACE-The Stanford Palo Alto Computer Exchange. A BBS for PC professionals and power users. Validation required. (415) 964-9309, multi-node, 2400/1200 baud, N/8/1, 24 hours. Sysop: Jay Fox.

Production World On-Line. (415) 571-6160, 300/1200/2400 baudd, 24-hours. An additional service from **Production World On-Paper**, a printed publication for the motion picture film, broadcast television, video and audio communities featuring Northern California people and facilities. A variety of information and message bases available. Sysop: Wes Dorman.

Amiga Addicts Anonymous BBS. (415) 283-5469 "BUDLINX." 24-hours, Xmodem, 300/1200 baud, N/8/1. Sysop: Randy Spencer.

Aardwolf Express Family Forum. (415) 651-4147. 24 hours a day, 7 days a week. 300/1200/2400 baud. Located in Fremont CA. System offers: *Infomat*, an electronic computer magazine; Showcase, shareware and demonstration programs download; complete King James Version of Bible online; Discovery (Christianity); Friends (user profiles and interests) and user opinion polls. Sysop: Veit Anton Johnson.

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Video Vision BBS. (415) 366-6409. 300/1200 baud. 8-N-1, 9:00pm to 7:00 pm Monday through Friday. 24 hours on weekends and holidays. Free registration with unlimited download. Just don't crash the system! A color bulletin board system that runs on XT turbo using Wildcat system. BBS include instant access, downloading, uploading, e-mail, on-line program, classified ads. This BBS is mainly for graphics or art, games and utility only. Extremely fast operation on 32 meg hard disk. Prospective user must read bulletin 1 or download "POLICY.TXT" and "FILELIST.ARC." Everyone is welcome. Sysop: Roel Sarceno

The CP/M Connection. (415) 866-4734. 300/1200 baud, 24 hours. This bulletin board is dedicated to the many computer users with Digital Research operating systems, such as CP/M-80, CP/M-86, Concurrent CP/M, Concurrent DOS and Echelon's ZCPR3. We hope all you CompuPro, Kaypro and Morrow users find "The CP/M Connection" a useful service in the professional community. Sysop: Mike Lipschutz.

BAHUG Bay area Heath/Zenith Users Group. (415) 365-7836. 8-N-1, Full duplex operation, 300/1200 baud, 24 hours. Supports programs in CP/M, ZDOS, MS-DOS and PC-DOS. Sysop: Ed Hayes.

619

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702

Public Domain Software Interest Group. (702) 794-3665. 24 hours, 300/1200/2400 baud, 8-N-1. Public domain software available for downloading, message board, and user supported donations of software. Sysop: T. Heisserman.

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The WOCCUG Board. Operated by West Orange County Commodore User Group. EBBS, 8-N-1, 24 hrs, 300/1200. (714) 772-4182. Sysop: Mark Stanford.

The Buckeye BBS. (714) 821-0589. C64, Punter, Xmodem, 300/1200 baud, 24 hours. Sysop: Art Collins.

FBBS. (714) 823-3673. 24 hrs., 300/1200 baud, full duplex. 50 megabyte system based in Fontana. Downloads for Commodore, Amiga, IBM, Atari, Apple, CP/M. 17 active message bases, weekly online magazine. Sysop: Larry Krzewinski.

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Nebula 6 BBS. (714) 595-4020. 300/1200 baud, 20 megs. Online full of download material for Apple, IBM, Atari, Tandy and Amiga. There is a vast amount of space for Commodore files. The bessage bases, text files and online games are extremely popular. Monthly giveaways take place dealing with game winners of trivia, etc. If you would like

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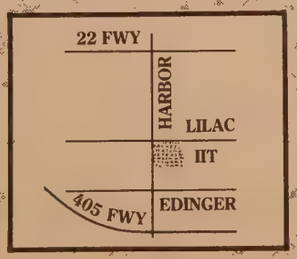

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F&W Guns. (714) 653-0494. 300/1200. 8-N-1. Sysop: Louis Ringe.

The Circuit Board. (714) 778-0948. 300/1200/2400, 8-N-1, 24 hours. IBM-PC software. 106 MB disk space. Sysop: Dave Kleinschmidt.

717

The Dead Board (717) 677-9573, 24 hrs., 8 bit word, 1 stop bit, no parity, 300/1200 baud. Grateful Dead tape trading and info; space for bulletins, ads and public mail.

805

Thousand Oaks Technical (805) 493-1495. This massive 64 megabyte board has a mind-boggling number of downloadable programs. The board has no bulletin board feature and allows unlimited upload time. Download time is limited depending on upload exchange.

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CCCUG BBS. Central Coast Commodore Users Group. (805) 934-2216. 24 hrs/7 days, 300 baud, Punter BBS protocol for downloads. Sysop: Greg Johnson.

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Affection Connection. (805) 527-7464, (818) 704-8588. 24 hrs., 7 days, 300/1200 baud. Multi-user BBS offering live on-line chatting, matchmaking. Sysop: Devin Woods.

Success BBS. (805) 238-7359. 300 baud, 24 hours. Commodore user group. Sysop: Larry Sarver.

813

Blithe Manor. (813) 839-0734. 1200 baud, 8-N-1, 24 hours. Multi line. Adult dating. Sysop: Bill Rucker.

818

Granada Engineering Group RCP/M (818) 360-5053. Technical information, BBS lists, and help on CP/M assembly language program writing.

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Atari Resource Magazine (ARM) (818) 446-5813. 24 hrs., 300 / 1200. Currently serving Atari and IBM computer users. Eleven message bases: general chatter, hangouts, advertise, for sale, XE Atari, ST Atari, modem, ul/dl, other BBS #s, Bible, job board. Sysops: Bob and Kim Reynolds.

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Greycastle BBS. (818) 796-5042. The bulletin board of the San Gabriel Valley Macintosh Users' Group. Operates 24 hours per day at 300 or 1200 baud. 5 megabytes available for 8 subboards, XModem file transfers on SnAPP software. Sysop: Bryan Menell, CompuServe ID 72307,2100, GEnie ID B.MENELL.

The Outpost RCP/M. (818) 353-8891, 300/1200 baud, 24 hours. Online games, occult and general text files, CP/M, Turbo Pascal. Sysop: Phil Hansford.

AT&T PC6300 Users' Group BBS. (818) 954-0530. 300/1200 baud, 8-N-1, 24 hours. Only So-Cal BBS "officially supported" by AT&T. Sysop: Eric L. Levinson.

Infotronics Computers BBS. (818) 282-7094, 300/1200 baud, 10 am-7 pm Mon-Sat, Sunday 12-5. 20 meg online. Message bases and file transfers for Macintosh (or Atari ST with Mac emulator), IBM (or Atari ST with IBM emulator) and even the Atari ST computers! (All computers are welcome.) We need users! No fee and plenty of elbow room—give us a call. Running on MichTron BBS software for Atari ST.

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AMP PC-RBBS. (818) 570-4406. 300/1200, 8-N-1, 24 hours. For IBM, program downloads and uploads, personal mail, public message system, 40 megs, no fee. New open sale conference for free for sale or wanted ads. Computer products offered at low price. Sysop: Edward Lee.

Affection Connection. (805) 527-7464, (818) 704-8588. 24 hrs., 7 days, 300/1200 baud. Multi-user BBS offering live on-line chatting, matchmaking. Sysop: Devin Woods.

Excalibur BBS. (818) 355-6949. Atari and other computers. 24 hours, 7 days, 300/1200. Sysop: White Knight.

The Computer Tele-Comm System. (818) 362-0995. 24 hours, 300/1200 baud, 8-N-1. We have meeting places, computer supplies. You can apply for credit cards. Enter our contest to win a 20 meg HardCard, 100 diskettes, $50 solid gold piece and more. We are the first BBS to offer an 800 toll free number. Call us direct the first time, after that call us free. Sysop: Dr. Jeffrey A. Keese.

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Luv-A-Hug Moonbeams B.B.S. (818) 772-0384. 300/1200 baud, 8 data bits, 1 stop bit, no parity. Full access restricted to members of Luv-A-Hug only. 25 Megabytes online. IBM compatible, Z-100, and CP/M public domain software. Sysop: Greg Cook.

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Teenplex BBS. (818) 289-6840. 300/1200 baud, 24 hours. A BBS devoted to teenagers. Message bases include: General, Games, Hardware, Software and Consulting. Supports Commodore and Atari file transfers. Sysop: Al Botts.

The Lunacy PC Board. (818) 894-1248. 8-N-1, 24 hours, 7 days, 300/1200/2400. 270 MB system with over 5,000 pubic domain files available. Five conferences, including games, music, PCjr, movies and astronomy. IBM compatible only. Running PC Board software with two nodes! Soon to go to 9600 baud. Operating since July 1985. Always the latest PD software. Online games and utilities. Free. Registration required. Sysop: Ken Ough.

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916

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Family Radio Forum. (415) 562-5483. 300/1200/2400, N-8-1, 24 hours. Download, upload, message, conference on parenting. For teens, singles, etc. Christian TBBS for everybody. Sysop: Richard Yim (voice 415/568-6200). Also (301) 261-1423 (Annapolis, MD), (712) 246-2115 (Shenandoah, IA), (916) 481-6320 (Sacramento, CA), (201) 736-1859 (Newark, NJ), (813) 269-7957 (Okeechobee, FL).

SAC TIBBS. (916) 927-3012. 24 hrs, 300/ 1200 baud, Xmodem downloads, graphics, speech. Free. Sysop: Woody Large.

The Devil's Domain BBS. (916) 268-1127. 8-N-1, 24 hours, 300/1200/2400 baud. 4 sub-boards including main, music, jokes/war, and elite. Up/downloading. General files. Voting topics, online gaming. A BBS devoted to have fun! Sysop: Asmodeus.

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Softy's Apple BBS. (916) 383-5244. 300/1200 baud, 8-N-1, 24 hours. An Apple BBS with a technical theme. We have boards for IBM as well. Retail store advertising with discounts for users of this BBS. Sysop: John Hagen.

ASSOCIATIONS

Computer Professionals for Social Responsibility. The LA chapter is interested in computer reliability and preventing nuclear war, the socially useful direction of computer research, and similar topics. They meet most third Wednesdays at 7:30 pm at varying locations. Contact Rodney Hoffman, P.O. Box 66038, Los Angeles, CA 90066, (213) 932-1913 for more information.

Organization of Professionals, Educators, and Novices (OPEN). Tutorials, random access period, feature presentation, public domain library, and CP/M literature are all part of the monthly meetings of Osborne owners/users and MS-DOS transportables. Club BBS and newsletter. Call Frank L. Christ at (213) 498-4186 for more information. Meetings at Learning Assistance Center, CSU Long Beach, 3rd Wednesdays, 7 pm.

The North Orange County Computer Club. This group is the largest and perhaps the oldest in the county. It is affiliated with a large number of special interest groups and offers something for just about every user. General meetings are usually the first Sunday of every month in the Hashinger Auditorium, Chapman College, Orange. For info, call (714) 998-8080.

The South Orange County Computer Club. A general computer club that meets the first Tuesday of every month at 3545 Harbor Blvd., Costa Mesa. Meetings begin at 7:00 P.M.

Valley Computer Club. Monthly meeting at 7 pm, first Wednesday of month in Burbank Board of Realtors Bldg., 2006 W. Magnolia Blvd., Burbank. All types of micros represented. Contact W.R. Robinson, 11850 Louise, Granada Hills, CA 91344, (818) 368-1383.

INTERFACE is a Los Angeles area gay and lesbian computer users' group for socializing and exchanging information. Meetings are open to all, regardless of level of experience. There are no dues or membership requirements. For additional information call Jim (213) 664-1127 or Pam (818) 368-0437.

San Diego Computer Society. Umbrella organization for over 40 Special Interest Groups (SIGs). Sponsors meetings, newsletters and annual computer fair. Meetings at Mesa College, 7250 Mesa College Drive, San Diego, 11:30-4, third Saturday each month. Contact Membership Chairman, P.O. Box 81444, San Diego 92138, (619) 549-3783. BBS (619) 549-3788.

Consolidated Computer Club. Meets second Thursday of the month. 7 pm, Life Support Association, 13741 Foothill Blvd., Sylmar, CA. Dues $25 yr. Send SASE to David Nussbaum, 14200 Polk Street, #53, Sylmar, CA 91342-2966.

Hughes Aircraft Computer Clubs. This club is for Hughes Aircraft employees only, but the BBS is open to everyone. Upload and download boards for Macintosh, IBM, Atari, Commodore, etc. Each board has its own public message service plus general message board. Contact Bud Grove, 21111 Dolores #146, Carson, CA 90745. BBS (213) 549-9640, 300/1200 baud, 24 hrs., 7 days.

Ventura Personal Computer User's Group. All MS-DOS and PC-DOS machines. Meetings 3rd Saturday 9 am-12 noon, Foster Library, 651 E. Main, Ventura. Contact Mike Regan, President, 301 Dana Point, Ventura, CA 93004, (805) 647-8273.

Micro User's Group — SFV Board of Realtors. Meetings 7232 Balboa Blvd., Van Nuys, 7 pm. third Thursday. Contact Mary Lou Williams, (818) 786-2110 for more information.

South Bay Computer Education Group. Supporting Apple, Atari, Commodore, IBM and compatibles, and TI99/4A. Meeting 2nd Wednesday of each month. Time 7 pm at 3675 Torrance Blvd., Suite 202, Torrance, CA 90503. Contact Jack Ward (213) 530-4879 or Judy Adams (213) 540-5010.

UCLA PC Users Group. IBM PC or compatibles owners welcome to join us on the 2nd Tuesday of the month, 7 pm. Public domain library , SIGs, BBS, seminars and newsletters. NPI Auditorium, UCLA, Westwood Plaza, Level C. For more information call (213) 473-6668.

Citizens Veto. For users with an interest in socio-economic issues who might want to try their equipment in working a model of a new approach. Primarily graphics and numbers, minimal text. Ewald O. Schlachter, (415)452-0151.

Pro*BUG—Professional Business Users' Group. Formerly Xerox Users Group. Meets 1095 Irvine Blvd., Tustin, 1st Saturday each month, 9 am. BBS (714) 543-3187, 300 baud, X-modem protocol. CP/M, PC, MS-DOS. Contact Allen Ashley, (714) 537-4608.

ICCA (Independent Computer Consultants of America. A nonprofit national association dedicated to the independent computer consultant. Its goals are to promote professionalism within the industry, increase awareness of ICCA to clients, and provide group benefits to members. Meets at Revere House, Tustin, 2nd Thursday, 6 pm. Contact Bill Creel, membership chairman, ICCA-OC, P.O. Box 3067, Santa Ana 92703, (714) 666-1981.

LAC-BUG (Learn About Computers—Beginner's Users Group. All computer owners and prospective owners eligible, ages 3 to adult. Educational materials and hands-on training included with membership. 24 hour telephone: (213) 372-8909. Mailing address: 6506 Arizona Avenue, Suite 127, Los Angeles, CA 90045.

NATIONAL/ INTERNATIONAL

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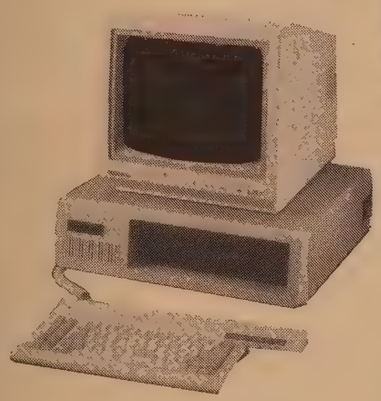

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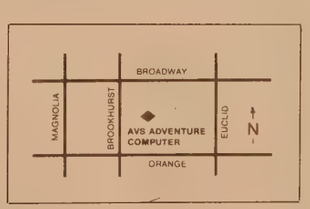

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Apple Co-op. 290 SW 43rd, Renton, WA 98055. (201) 251-5222.

JUG (Jefferson State Computer Users Group). Many SIGs, newsletter. Dues $5.00 year, some SIGs additional. Contact JUG, P.O. Box 457, Gold Hill, OR 97525-0457.

MicroPro Users Group of America. National group with over 200 members worldwide. Dedicated to supporting MicroPro products, especially WordStar and InfoStar, for any hardware. c/o Procyon Associates, 140 Riverside Drive, New York, NY 10024. (212) 595-4811.

Golden Apple Club, Apple II and Macintosh. Contact Stefano Minotto, Golden Apple Club, Riviera Tiso da Camposanpiero, 26, 35100 Padua, Italy.

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Getec s.r.l. Contact Silvio Esengrini, Via dei Guarneri Nr. 24,-20141 Milan, Italy. Phone: 39/2/5696502, 39/21 5694185.

Italtel S.p.a. Contact Michelangello Sala, C.Na, Castelletto, 20090 Settimo Milanese, Milan, Italy. Phone 39-2-4388-4288.

PLUG (The Plus/4 Users' Group). Dedicated solely to support of the Commodore Plus/4. No regular meetings, 200 members in US, Canada, Mexico, and Europe. Newsletter, public domain software library. P.O. Box 1001, Monterey, CA 93942.

KAPPA (Memphis Kaypro Users Group). Meetings at 2 pm, 1st Saturday of the month, Room 2, Jennings Hall. Contact Hugh Lamar, 5983 Macon Cove, Memphis, TN. (901) 377-4140.

The AppleWorks Users Group (TAWUG). c/o Regional Rep, 27421 Berenda Way, Hayward, CA 94544, (415) 887-7499.

FORTH Interest Group, International Office. P.O. Box 8231, San Jose, CA 95155. For further information call (408) 277-0668.

Apricot User Group (APRICUG). Box 98, Malverne, NY 11565.

Spellbinder Users' Group has an international newsletter with useful macros written by members, advice on new applications, news, and word-processing problem solving. All experience levels. California members welcome. Write P.O. Box 14, Newark, Notts, England NG24 4TP; telephone (0636) 77313; telecom Gold/Dialcom Mailbox 72: MAG95610.

National TeleVideo Users Group. Meets 7:30 pm, 3rd Thursday, 1170 Morse Ave., Sunnyvale. P.O. Box 22007, San Francisco, CA 94122. Call for info—David, (415) 753-1552.

Apple Fontrix Club. Monthly newsletter. P.O. Box 29857, Thornton, CO 80229-0857.

N.A.B.V.I.C.U. - The National Association of Blind and Visually Impaired Computer Users. The purpose of this group is to gather information that will assist the blind or visually impaired person in utilizing the enromous potential of computers. It supports **CompuHelp**, a menu driven database-bulletin board programmed for use by the blind and visually impaired. It is available 24 hours a day, 7-days a week, 300/1200 baud, 8 or 7 bits, even or no parity, 1 stop bit. (916) 786-3923. Compuhelp is also available on disks. For more info, contact Otto C. Haiungs, Chief Executive Officer, Sysop, at P.O. Box 1352, Roseville, CA 95661-1352. (916) 783-0364.

28 Barbary Lane. Meets at 121 13th Ave. East, Seattle, WA, Fridays 8:00 pm. Contact A. Madrigal, (206) 323-2828. BBS: (206) 323-2828.

Microenvironmental Information Consortium For Researchers Overseas. World Headquarters, 712 Avery Rd. W. Winlock, Washington 98596, USA. Washington phone: (206) 262-0159. California phone: (415) 524-9309. Micro on MCI mail, ECONET & WELL TELEX number 6502928733 via WUI.

USER GROUPS

AT&T

AT&T PC6300 Users' Group. Meetings at various locations—contact BBS for latest information. Or write Eric Levinson, P.O. Box 7364, Burbank, CA 91510. BBS (818) 954-0530, 300/1200, 8-N-1, 24 hours.

ORCA - Orange Riverside Counties AT&T 6300 UG. Meetings bimonthly, second Saturdays, 11:30 am, at 2144 Michelson Drive, Irvine. Contact Chuck Patten, 1220 Page Circle, Corona, CA 91720, (714) 851-0119, ext. 234.

ADAM

Adam Users of Southern California. Come and keep the ADAM going. We have access to some of the people who developed software for ADAM and we are going to create a base for tips, reviews, and a BBS. Get on line with ADAM. Meetings at Airport College Center, Sepulveda and Century, 4th Sunday, noon. Contact Harvey Klein, 1736 S. Bedford, LA, (213) 553-1062 or Paul Shecter, 5545 Lindley, Tarzana.

ALPHAGRAPHICS

Alphagraphics. Contact Stella or Jim Muller, 16425 Bernardo Ctr. Dr., San Diego, Ca. 92128, (619) 451-2250.

AMIGA

Amiga Friends (AF). Contact Russ Kavanagh, (714) 898-2947. Call for more information, we'll see you there!

San Fernando Valley Amiga User Group (SFVAUG). Meets 2nd Thursday of the month, 7-10 pm, at American Legion, 7338 Canby Ave., Reseda. We've got demos, SIGs, newsletter, PD library, disk of the month, ANSWERS. Bring your AMI, we have lots of room now! Contact Randy Likins, (818) 709-0932.

Bits & Pieces Amiga Group of Anaheim. Meets every Tuesday 6:30-10 pm at 1130-A N. Kraemer Blvd., Anaheim, CA 92806. C-64, C-128, Amiga. Public domain software, technical help, guest speakers, much more. Contact John Callaci or Mike Dalton (714) 630-8644/630-8711 for information.

Color America. Amiga SIG meets 1-3 pm on the third Saturday of the month at Rosemead Community Center, 3936 N. Muscatel Ave., Rosemead. For information contact Mark Randall, 2227 Canyon Rd., Arcadia, CA 91006, (818) 355-6111.

Amiga Tech Users Group #1. Meets 4th Tuesdays, 7 pm, University Union, Cal Poly Pomona. Contact Mark Randall, (818) 355-6111. Call for more information, we'll see you there!

Amiga Tech Users Group #2. Meets at Rosemead Community Center, 3936 N. Muscatel Ave., near Valley Blvd., Rosemead, 1 pm, 3rd Saturday of the month. Contact Mark Randall, (818) 355-6111. Call for more information, we'll see you there!

Empire Amiga User Group (IEAUG). Meets 7 pm, 3rd Tuesday of the month, California School for the Deaf, 3044 Horace St., Riverside. Contact Paul Corbet (714) 684-6245. Call for more information, we'll see you there!

LA Amiga Users Group (LAAUG). Meets 3rd Wednesday, 7:30 pm, Veterans Memorial Auditorium, Culver and Overland Blvds., Culver City. Call (213) 387-3698 for more information. We'll see you there! BBS: (213) 559-7367.

West Side Amiga Users Group (WAUG). Meets 2nd Wednesday, 7:30 pm, John Adams Junior High School Cafeteria, 16th and Ocean Park Blvd., Santa Monica. Call (213) 451-0713, during the day, for more information. We'll see you there!

Apple/Valley Computer Club. Member interests include Apple, Amiga, IBM and others. Meetings are held on the 2nd Wednesday of each month, 7:30pm, at Valley Presbyterian Hospital, meeting room #3, 15107 Van Owen, Van Nuys, CA. For more info, contact Dr. William H. Trent, 6502 Kester Avenue, #7, Van Nuys, CA 91411, (818) 988-1752.

Ventura Amiga Users Exchange. (VAUX). Amiga users group for Ventura County. Meetings held on the second Monday of each month, 7:30 pm at the E.P. Foster Library, 651 Main Street, Ventura. Call (805) 646-7121.

AMSTRAD

West LA Amstrad. Meets every fourth Tuesday, 8:00 pm at Venice High School. Call (213) 397-7981 for further information.

APPLE

Original Apple Corps. First Apple group ever. SIGs for AppleWorks, Telecommunications, Educators, Macintosh. Meetings in the Santa Monica Mall, second Sunday of the month, 3rd floor Community room, 12 noon. Contact Rich Rollons (213) 378-0707, or Fred Duffy, (213) 396-5515.

The Orange Apple Computer Club meets 9 am-12 pm the first Saturday of each month in the Science Hall at Orange Coast College, Costa Mesa. We have over 700 members, ranging from beginners to certified Apple developers, and a large Apple II public domain software library. There are several very active special interest groups which include Apple III, educators, Apple II, modem and investors. For further info call (714) 770-1865.

South Bay Apple III User Group. Over 85 Apple III users share information, programs, group purchases, product demos. Special interest groups meet 1st Tuesdays. General meetings on IIIrd Tuesdays at 7:30 p.m., UCLA Harbor General Hospital, Room III. Corner of Vermont and Carson, off 110 Fwy. Contact Gary Fortune, P.O. Box 432, Redondo Beach, CA 90277, (213) 316-7738.

Tri City Apple User's Group (Glendale, Burbank, Pasadena). New group formed from merger of Pasadena and Wabash groups. Meetings are scheduled the third Thursday of the month at Casa Colina Neurological Learning Center, 50 North Hill St., Pasadena at 7:30 pm. Contact Marie Kaden at (818) 846-6682. Dues $12./yr.

North San Diego Apple Club. Meets 1st Tuesday of each month at Meadowbrook Middle School, Meadowbrook Lane, Poway, 7 pm. Contact Bill Walker (619) 579-9649 or Chuck Newby (619) 566-0387, P.O. Box 75, Poway, CA 92064.

SD Allers. Want to start Apple III user group in San Diego area. Contact James Fair, P.O. Box 1592, Lakeside 92040, (619) 561-3270.

Applejacks of the Inland Empire. Primarily for Apple II users. Meets first Wednesday and third Thursday of the month, 7-9 pm, at Norman Feldheym Central Library, 555 W. 6th St., San Bernardino. Contact Scott Zehm at (714)883-2234 for information, or write Applejacks, P.O. Box 23025, San Bernardino, CA 92406.

Appleholics Anonymous of Ventura County. Software library, club BBS, newsletter, hardware and software demos. 150 members. Meetings sometimes vary—call to verify (805) 482-3501, 484-2611, 659-5326, 985-9781. Meetings 3169 Telegraph Road, Ventura, 9:30 am, usually 2nd Saturday.

PVAUG-Pomona Valley Apple Users Group. Meetings are held on the first Saturday of each month. For time and location, contact Victor Michael at (714) 629-0540.

Apple/Valley Computer Club. Member interests include Apple, Amiga, IBM and others. Meetings are held on the 2nd Wednesday of each month, 7:30pm, at Valley Presbyterian Hospital, meeting room #3, 15107 Van Owen, Van Nuys, CA. For more info, contact Dr. William H. Trent, 6502 Kester Avenue, #7, Van Nuys, CA 91411, (818) 988-1752.

APRICOT

Apricot Roundtable Group of Hapless Hackers (ARGHH!) An Apricot user's group is forming in east Long Beach, open to any Apricot, XI, F1, F2, F10 or FP user, or anyone else with MS- or PC-DOS and 3½" disk drives. Phone Jim Bliss at (213) 425-6302. Meetings 7–10 pm, 3rd Wednesdays or at such other time as membership decides, at 7215 Killdee St., Long Beach, CA 90808.

ASHTON-TATE

dBUG-dBASE Users Group. For all levels of dBASE users from beginners to expert. Meets 3rd Monday each month, 7-9 pm, Blue Cross Bldg., 21555 Oxnard, Woodland Hills. For more info contact Bruce Ascough, (818) 789-0723.

dBASE III SIG of UCLA PC Users Group. Meets once per month in Santa Monica—date varies. Contact Tom Rombouts, 1428 N. Curson #6, LA, CA 90046, (213) 874-7471.

dVALLEY dBASE Users Group. Largest and most active dBASE group in So. Calif. Meets 4th Monday of the month in Van Nuys. Large meeting room with plenty of parking. Dedicated to dBASE and its add-ons, all levels. Large cataloged library of programs and routines. Exciting group learning projects, "fix-it-session" at every meeting, plus speakers and demos. For information contact Louie Astorga, President, c/o Real Estate Services, P.O. Box 7140, Canoga Park, CA 91304-7140. (818) 998-3210.

ATARI

Atari Computer Association of Orange County (ACAOC). Join one of the biggest Atari user groups in Southern California. Monthly magazine, large public domain library, and club BBS. Dues $24.00/year, $18.00 for non-attending out-of-town members. Meetings at Golden West College, Room 131, Huntington Beach, 1 pm, fourth Sunday of the month (ST meeting same time and place on second Sunday). P.O. Box 9419, Fountain Valley, CA 92728 or (714) 838-3099 for more information.

West LA Atari Users Group. Come join fellow Atarians! Dues are $20.00/year. Newsletter, P/D library, ATR-Sig, discounts, guest speakers. Please call for directions to meeting room! If you're reading this, you belong with us. Meetings first and third Wednesday of the month, 7:30 pm, Lincoln Park, Santa Monica, Wilshire & Lincoln. Contact Bill Skurski (213) 552-4739.

Los Angeles Atari Computer Enthusiasts (LAACE). Join Los Angeles' largest and oldest Atari Users' Group, now in our 6th year. Enjoy our monthly meetings and newsletter. Participate in our educational SIG (Special Interest Groups) seminars and meetings. Learn how to get the most out of your Atari; access our hundreds of public domain programs; benefit from the help and experience available from our experts. Come as our guest on the 1st Tuesdays of the month (2nd Tues if holiday occurs in 1st week) at 7:00 pm at Granada Hills High School, 10535 Zelzah Ave., Granada Hills, CA. For full benefits, including member access to our 10 meg BBS, dues are $20/yr ($25 for entire family). Write P.O. Box 7752, Van Nuys, CA 91409 (include your phone number) for additional information.

Santa Clarita Valley Atari Computer Enthusiasts (SCV-ACE) invite you to join us. Meetings are the first Thursday every month from 7 to 9 pm at the Moose Lodge, 18000 W. Sierra Hwy., (1/2 mile north of Soledad Canyon Road), Canyon Country. For info call Bob at (805) 259-6540.

Atari Computer Enthusiasts Network (ACENET). Umbrella group representing many Southern California Atari groups. If you can't locate a user group in your area, contact John Tarpinian at 6055 Cahuenga Blvd., #2, North Hollywood, CA 91606, (818) 760-1831.

Hooked on Atari Computer Keyboard Society (HACKS). Meetings on the first Saturday of the month in the Burbank area. For more information contact John Tarpinian, 6055 Cahuenga Blvd., #2, North Hollywood, CA 91606, (818) 760-1831.

AA-Atari Users Group. Meets at Upland Public Library, 450 N. Euclid Ave. Atari 400, 800, XL/XE group meets second Tuesday, 6-9 pm. Call Juan Valdes, (714) 980-6841 for more info. 520/1040ST group meets fourth Thursday 6-9 pm. Call Jay McCarthy, (714) 829-8722 for more information.

MAST—Mid-Cities Atari ST. Meetings at 9025 E. Artesia Blvd., Bellflower, first Sunday, 7 pm. Contact Jane Hughes, 9701 E. Artesia Blvd., Bellflower, (213) 867-0626.

South Bay Atari Computer Enthusiasts (S.B.A.C.E.). Meets 2nd Tuesdays, 7:30 pm, VFW Hall, 1865 Lomita Blvd., Lomita. Meetings consist of guest speakers from software and hardware suppliers, demos by members, q & a periods, along with current Atari rumors. Newsletter, published 6 times a year, included with $20/yr membership fee. Write S.B.A.C.E., P.O. Box 83668, Los Angeles, CA 90083, for more information, or call Dick Reaser, (213) 645-7063.

Pasadena Area Local Atari Computer Enthusiasts (PALACE). Meets monthly in the Monrovia area on the third Tuesday of the month. Contact Chris Roberts, sysop of PALACE BBS, (818) 359-1697.

AUTOCAD

AutoCAD Los Angeles Users Group. Meetings fourth Thursday of the month (except November and December—Meetings Nov. 20 and Dec. 18), Church of Religious Science, 260 North Pass Ave, Burbank. Contact Tesfaye Abagaz, (818) 843-5770 (work).

COMMODORE

San Diego Commodore Users Group. Meets third Wednesday, 7 pm, 2557 3rd Ave. (Women's Club), San Diego. For all Commodore machines. Contact Jane Campbell, (619) 584-2872 for more information, or write: P.O. Box 86531, San Diego, CA 92138-6531.

San Fernando Valley Commodore Users Group. Meets second Wednesday of the month at Patrick Henry Junior High on Louise Ave. between Devonshire and San Jose in Granada Hills, near 118/405 freeway interchange. Contact Tom Lynch, 21208 Nashville, Chatsworth, CA 91311, (818) 709-4736.

San Luis Obispo Commodore Computer Club 1766 9th St., Los Osos, CA 93402. (805) 528-7475 BBS.

The Commodore Users Group - San Juan Capistrano. This group of C64 users meets the second Saturday of every month from 9:00 am till 12:00 at Great American Federal Savings and Loan, 32232 Camino Capo, San Juan Capistrano. For info call 496-5745.

Orange County Commodore Technical User's Group C-TUG. Orange County's Commodore user group. Club newsletter, two 300/1200 baud BBSs, door prizes, SIGs in Comal, DOS protection, data bases, wpros, and BASIC. Custom software and ROM chips, and just plain good times. Meetings at Mercury Savings and Loan, 4th and Newport, Tustin, fourth Sunday of the month, 10:30 am. Contact Ellis L. Higham, corresponding secretary, P.O. Box 8342, Orange, CA 92664, (714) 554-9222.

Hollywood User Group (HUG) for Commodore computers. Meets 2nd Saturday of the month at Plummer Park, Conference Room, 7377 Santa Monica Blvd., West LA at 12 noon. Contact HUG BBS (213) 874-8256 (24 hrs) or write HUG, P.O. Box 38313, Hollywood, CA 90038.

Southern California 64 Users Group. Learn more about your Commodore 64. Extensive public domain disk library. Meet at Mid Cities Bank in Gemco shopping center on Bellflower, just south of 91 Freeway, 7 pm, 3rd Tuesday of every month. Contact Joe Allain, 3852 Riverton, Studio City, CA 91604, (818) 985-2647.

C-128 West UG. User group for owners of the Commodore C128, from beginner to advanced; PD software available. New group still assessing the needs and interests of members. Intend to network with other user groups on C128 software. Meetings 2nd Tuesday, 7:15 pm, McKinley School in Santa Monica, Santa Monica Blvd. and Chelsea. Contact Don Campbell (213) 828-9308.

Inland Empire IBM/C64 User Group. Major subjects are local area networks, small business software, data communications. Send SASE for free newsletter with dates and software library. Contact Winfried Hofacker, P.O. Box 988, Chino Ca 91708-0988.

Commodore Creations Users Group (CCUG). We offer library, newsletter, and other services; upcoming BBS; soon to be member of Commodore World. Meets 2nd or 3rd Sunday of each month 2-4 pm. Membership dues $26 per year. Call or write for info: Brian R. Klotz, 1135 Coronet Ave., Pasadena, CA 91107 (818) 351-8198.

Back-Country Commodore Club. Meets first Thursday 7 pm, Ramona Lutheran Church on 14th St. Check us out for relaxed, informative group discussions. We're here to help those with problems and to promote better uses of Commodore 64s, 128s, and Amigas. Contact Gerry White at (619) 789-3209, 511 14th St. #D-13/P.O. Box 373, Ramona, CA 92065. Meetings at 617 16th St., Ramona, CA 92065, 7 pm, 1st Thursday each month.

General Dynamics Commodore Computer Club. Meets third Tuesdays, 4:30 pm, Convair Rec. Assn. room C. Commodore 64 and 128 only. Contact Al Wilson, (619) 429-6790 for information.

C.U.B.E. Commodore Users, Buffs, and Enthusiasts meet first and third Mondays of each month, 7:30 pm, East Side Christian Church, 668 Obispo, Long Beach. Contact Lynn Cothern, 2005 Palo Verde #163, Long Beach, (213) 421-1041 modem.

Com-Pacs. Meetings and/or copies of public domain software and discussion of problems. New computer C64/128 technologies. Sales and swaps of equipment. Meetings at 2354 Elmgrove St. Los Angeles, CA, Saturdays, 3 pm. Contact Lon Damiani, (213) 222-2277.

PLUG (The Plus/4 Users' Group). Dedicated solely to support of the Commodore Plus/4. No regular meetings, 200 members in US, Canada, Mexico, and Europe. Newsletter, public domain software library. P.O. Box 1001, Monterey, CA 93942.

Pacific Computer Club (Commodore). Meetings 391 S. Madison, Pasadena, 2nd Thursday, 7 pm. Contact Norman Sauppe, (818) 792-9840.

FCUG/SixtyFourum. PD library, newlsetter, meeting 3rd Saturdays, 8:30 am. Contact George Bearden, P.O. Box 16098, Fresno, CA 93755, (209) 291-7053. BBS (209) 431-6288.

Central Coast Commodore Users Group. Meets 3rd Tuesday of each month. Contact

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Gilbert Vela, 4237 Plumeria Ct., Santa Maria, CA 93455. CCCUG BBS (805) 934-2216, 24 hrs/7 days, 300 baud, Punter BBS protocol for downloads.

Diamond Bar User Group (DBUG). The Diamond Bar User Group is dedicated to the Commodore line of computers, C64, C128, and the Amiga. The club has a large public domain software library base, especially Commodore CP/M. Free raffles, technical discussions, software demonstrations, and the monthly freebie disk can be found at most any meeting. Meetings 2nd and 4th Wednesdays, 7 pm, Diamond Bar Library, 1061 S. Grand Ave., Diamond Bar, CA. Contact David Dietzel, (714) 947-1882 for more information.

South Orange County Commodore Programmers and Users (CPU). Meetings at Great American Savings, 23688 El Toro Road, El Toro, third Saturdays, 9 am. Contact Don Gribble, President, 25401 Champlain Rd., Laguna Hills, CA 92653, (714) 830-2430 or (714) 855-8320.

West Orange County Commodore User Group. Meetings 1st Sundays, 1 pm, Mercury Savings, Buena Park, corner of Valley View and Lincoln. Write for info: P.O. Box 6441, Buena Park, CA 90622; or call Mark Stanford, (714) 772-4182 or Art Collins (714) 821-0195.

Bits & Pieces Amiga Group of Anaheim. Meets every Tues-day 6:30-10 pm at 1130-A N. Kraemer Blvd., Anaheim, CA 92806. C-64, C-128, Amiga. Public domain software, technical help, guest speakers, much more. Contact John Callaci or Mike Dalton (714) 630-8644/630-8711 for information.

The Pasadena Commodore Computer Club meets the first and third Wednesday of the month at 7 pm in the Circadian Room of the cafeteria on the campus of Pasadena City Col-lege, SE corner of Colorado and Hill. For more information write to PCCC, P.O. Box 1163, Arcadia, CA 91006, or call (818) 447-2212 after 2:30 Pacific time.

Osborne Komputer Owners Klub (OKOK) is a microcomputer user group serving a variety of computers: Osborne, Kaypro, Commodore C128, IBM and clones. As an affiliate of FOG, we serve both MS-DOS and CP/M operating systems. We offer monthly meetings, classes, public domain software library, electronic bulletin board and special purchase opportunities. Meetings third Wednesday of the month, 7:00–10:00 pm. Meetings held at the Altadena Public Library, 600 E. Mariposa, Altadena, CA. Contact Lionel Soracco, (818) 794-3243, or write OKOK, P.O. Box 40429, Pasadena, CA 91104.

Commodore Helpers User Group Of Long Beach.(CHUG). Meets second Saturday of each month, 9:00 am to 12:00 noon at Mercury Savings Bank, 4140 Long Beach Blvd. Dues $12.00 a year. Visitors and families welcome to attend. Support the C64, C128 and Amiga. Q-Link, SIG and more. Newsletter distributed at meeting. Demos and more. We welcome people who need help with their Commodores. Free disk for members at each meeting. Soon to come: area BBS for users and professional software demos. If you have any questions call Rodney Hayes, president, at (213) 863-8420, from 6:00 pm to 10:00 pm, M-F.

Success. Commodore group meets at 18th and Oak, Paso Robles, CA on the second Tuesday of the month at 7:00 pm. Contact Wayne Weichel (805) 238-6294 for information.

CORDATA

Cordata Users Group. Meets 2nd Fridays, 7 pm. 20630 Lassen St., Chatsworth. Contact Alicia Fahey, (818) 709-6202 for information.

DEC

DECUS Inland Empire PC-LUG Digital Equipment Computer Users Society. Free to all DEC users; Decmates, Rainbows, Professionals; P/D software; guest speakers; software /applications assistance available; FIDO bulletin board. Meets Cal Poly-Pomona campus, Library Bldg 15, Room 12, 7:30 pm 3rd Tuesday of each month. Contact Jan Snyder, 380 Verona St., Upland, CA 91786, (714) 620-7511 ext. 4376.

DECUS Southern California PC-LUG. Digital Equipment Computer Users Society. Free to all DEC users; Decmates, Rainbows, Professionals; P/D software; guest speakers; software/applications assistance available; FIDO bulletin board. Meets 10:30 am, 1st Saturday of the month, Press Telegram Bldg., 3rd Floor, 604 Pine Ave., Long Beach, CA. Contact Bill Davis, 1457 W. 219th St., Torrance, CA 90501. (213) 827-4600.

DECUS Rainbow Pacific PC-LUG Digital Equipment Computer Users Society. Free to all DEC users; Decmates, Rainbows, Professionals; P/D software; guest speakers; software /applications assistance available; FIDO bulletin board. Meetings at Digital Equipment Corporation, 6101 W. Centinela Ave., Culver City, CA 90230, 7 pm, 2nd Wednesday of each month. Contact Don Braums, 3312 Summertime Lane, Culver City, CA 90230, (213) 202-1784.

EASYBUSINESS

Easybusiness Systems Users Group. CPAs, Consultants, and other business people interested in Computer Associates Easybusiness Systems' Accounting Software. For information, contact Gary Robinson (213) 398-6544.

EPSON

Cursor Club Epson 402 W. Arrow Highway, Suite 6, San Dimas, CA 91773. (714) 559-8361, Bulletin Board: (714) 592-6316.

San Fernando Valley Epson User Group. Meetings at Fallbrook Square Community Room "The Meeting Place" off the Food Court in the new Fallbrook Mall, 6633 Fallbrook Ave., Canoga Park, between Victory and Vanowen. Meets 3rd Wednesday of each month at 7 pm. Contact Pat Denslow, (818) 881-4029 for information.

Epson Users Group of Orange County. 6075 Jeffrey Mark St., Cypress, CA 90630, (213) 414-4817.

Epson Users of San Diego. P.O. Box 87448, San Diego, CA 92138, (619) 560-7604.

High Desert Epson Users Group. 933 Cottonwood Drive, Barstow, CA 92311, (619) 256-3541.

PSC/QX. 2934 Wilshire Blvd., Santa Monica, CA 90403, (213) 453-4535, Bulletin Board: (213) 474-4952.

South Bay Epson Users Group. 1115 Cerise Avenue, Torrance, CA 90503, (213) 328-9916, Bulletin Board: (213) 618-1940.

Epson Computer Club of America. Monthly meeting 2nd Saturday of the month at 10 am, Mercury Savings and Loan, Irvine Blvd. one block east of Newport Ave. Messages Epson West Bulletin Board (714) 630-7104 User area B:15. Monthly newsletter "The Help Key." Contact Roy Boorman, 4021 Winterhaven St., Yorba Linda CA 92686, (714) 524-9483.

Epson User's Group of Orange County. Meets on 3rd Saturday of the month from 10 am to 12 noon at 2111 Main Street, Huntington Beach, CA 92648. Contact Richard A. Petersen. 7282 Mast Dr., Huntington Beach, CA 92646. (714) 536-6979.

FORTH

FORTH Interest Group, Los Angeles Chapter. Meets 4th Saturday, 10 am, Hawthorne Public Library, 12700 S. Grevillea, Hawthorne. Contact Phil Wasson (213) 649-1428.

FORTH Interest Group, Orange County Chapter. Meets 1st and 4th Wednesdays, 7 pm. Call Noshir Jesung for info. (714) 842-3032.

FORTH Interest Group, San Diego Chapter. Meets weekly, Thurs., 12 noon, contact Guy Kelly (619) 268-3100 ext. 4784.

HEATH

Los Angeles HUG (Heath Users Group). A support group for users of Heath/Zenith computers. Monthly speakers, software library, information exchange, newsletter. Meetings open to visitors. Meetings at 2309 S. Flower St., LA 90007, first Thursday of each month at 7 pm. Call Tom Davis for information at (213) 462-2642.

LUV-A-HUG Heath /Zenith User's Group. Meets 2nd Thursday of each month, 7pm, at Heath /Zenith Computers and Electronics, 22504 Ventura Blvd. Woodland Hills, CA 91364. A users group dedicated mainly to the Heath/Zenith line of computers, but anyone interested in computing is welcome. Dues are $12/yr, which includes group newsletter and copying of public-domain software from extensive library of PC-, Z-100, and CP/M compatible software. For more info contact John Rotondi, between 10:00 am and 6:00 pm at (213) 874-9344. BBS (818) 772-0384.

HEWLETT-PACKARD

Club of Hewlett - Packard Hand-Held Users (CHHU). HP handheld users worldwide support CHHU as a noncommercial, open, independent club dedicated to applying today's machines and making a contribution to the true personal computer of tomorrow. Send SASE for more info to Richard J. Nelson, 2545 W. Camden Place, Santa Ana, CA 92704, or call (714) 754-7757 for meeting directions.

LA-SCRUG. Hewlett - Packard Series 100 business computer user group. Demonstrations and seminars on HP software and equipment. Meetings at 5161 Lankershim Blvd., North Hollywood, 7-9 pm, 2nd or 3rd Thursday of the month. Contact Dave Mark, P.O. Box 60975, Pasadena, CA 91106, (818) 794-4969.

IBM

The Greater South Bay IBM PC Users Association. Any L.A. area PC or compatible owners are welcome to attend these meetings at the TRW cafeteria on Compton Blvd. Meeting time is 7:00 pm on the third Thursday of each month. For info call (213) 398-8153.

Technical Users Group (TUG-NET). For CP/M & MS-DOS PC users. Meets on the first Thursday of each month at 7:00 pm. Valley Plaza Park, Community Room, 12240 Archwood St., North Hollywood, CA. Contact Mike Faith - (818) 994-6567. DOS SIG meets 3rd Mondays, 7 pm, Sears S&L, Van Nuys. Call (818) 701-0512 for information. BBS (818) 882-6045.

UCLA PC Users Group. IBM PC or compatibles owners welcome to join us on the 2nd Tuesday of the month, 7 pm. Public domain library , SIGs, BBS, seminars and newsletters. NPI Auditorium, UCLA, Westwood Plaza, Level C. For more information call (213) 473-6668.

Pasadena IBM User's Group. Meets 3rd Wednesday of each month at Cal Tech, Bridge Building, Room 201. For more info send SASE to Steve Bass, 711 E. Walnut Street #306, Pasadena, CA 91101, (818) 795-2300.

Inland Empire IBM/C64 User Group. Major subjects are local area networks, small business software, data communications. Send SASE for free newsletter with dates and software library. Contact Winfried Hofacker, P.O. Box 988, Chino Ca 91708-0988.

The Foothill Computer Club. An IBM-PC users group. CCCUG — Crescenta-Canada-Compatible Users Group. P.O. Box 1265, La Canada, CA 91011, (818) 790-6672. Meetings 1st Wednesday of the month at 6:30 pm at the Glendale Federal Bank, 2350 Honolulu, Montrose, CA. For newsletter send SASE to above address.

NOCCC Lotus & Business SIG. Subgroup of North Orange County Computer Club. Meets first Sundays at Chapman College in Orange, CA, 11:15 am. Lotus 1-2-3 and business application demos, speakers. Call to verify dates, address: Vance Joachim, (714) 998-8080. P.O. Box 3616. Orange, CA 92665.

The Riverside IBM Computer Club. Meetings at Computerland Riverside, Monday 7 pm. We specialize in software demonstrations, sharing of public domain programs, and mutual problem solving activities. Contact Jimmie E. Heidecke, (714) 685-5407 for info.

Orange Coast IBM PC User Group. A not-for-profit organization open to anyone with or considering the purchase of an IBM PC or compatible computer. Monthly meetings, usually on the last Saturday of the month, consist of one or two guest speakers, a short business session and a period for random access. OCIPUG has public domain and user supported software, a monthly newsletter and a bulletin board. Membership is $20 per year. Meetings at Orange Coast College, Science Hall, Costa Mesa, last Saturday of the month, 9 am–12 noon. Contact Tom Sutro, P.O. Box 6100-211, Costa Mesa, CA 92628, (714) 850-0474.

Valley Computer Club. IBM PC Users Group meets first Wednesday each month. The group is part of Southern California's original computer club. Its purpose is to distribute public domain software and exchange info on the PC. Meetings at 2006 W. Magnolia Blvd., Burbank, 7 pm. Contact Sy Lieberman, (818) 981-9593.

Kern Independent PC User Group (KIPUG). Meets the 2nd Thursday of each month beginning at 7 pm at the County Superintendent of Schools Boardroom, 5801 Sundale Ave., Bakersfield. Contact Jim Harrer, P.O. Box 2780, Bakersfield, CA 93303, (805) 395-0223.

Bits & Pieces IBM of Orange County. Meets at 1130-A N. Kraemer Blvd., Anaheim, every Saturday at 10 am. Call John, (714) 630-8644 for more information.

Ventura Personal Computer User's Group. All MS-DOS and PC-DOS machines. Meetings 3rd Saturday 9 am-12 noon, Foster Library, 651 E. Main, Ventura. contact Mike Regan, President, 301 Dana Point, Ventura, CA 93004, (805) 647-8273.

Thousand Oaks Personal Computer Club (TOPCC). Meets fourth Thursday, except November and December (3rd Thursday), at CAL Lutheran Univ., 60 W. Olson Road, Thousand Oaks. 6:30 pm beginners, 7:30 regulars. Group is five years old and has approximately 150 members. Contact Bob Tracy, (805) 482-7092 for more information. BBS: (805) 499-8378.

Southwest PC Users Group. All computer users are welcome. Meetings 3rd Saturday of each month; call for meeting place. Christine Tripp, (213) 935-4105.

Tulare County PC. Meetings at Genesis Computers, 3rd Thursday each month. Call Roger Jenan, (209) 733-8204 for information.

Claremont Computer Club. This club is for any interested IBM PC or compatible users. Meetings start at 7:30 pm on the 3rd Monday of the month. Call (714) 626-2268 for meeting location and information.

Apple/Valley Computer Club. Member interests include Apple, Amiga, IBM and others. Meetings are held on the 2nd Wednesday of each month, 7:30pm, at Valley Presbyterian Hospital, meeting room #3, 15107 Van Owen, Van Nuys, CA. For more info, contact Dr. William H. Trent, 6502 Kester Avenue, #7, Van Nuys, CA 91411, (818) 988-1752.

Osborne Komputer Owners Klub (OKOK) is a microcomputer user group serving a variety of computers: Osborne, Kaypro, Commodore C128, IBM and clones. As an affiliate of FOG we serve both MS-DOS and CP/M operating systems. We offer monthly meetings, classes, public domain software library, electronic bulletin board and special purchase opportunities. Meetings third Wednesday of the month, 7:00–10:00 pm. Meetings held at the Altadena Public Library, 600 E. Mariposa, Altadena, CA. Contact Lionel Soracco, (818) 794-3243, or write OKOK, P.O. Box 40429, Pasadena, CA 91104.

KAYPRO

Lakewood/Long Beach KUG is a group of Kaypro computer owners dedicated to helping each other solve problems and share information and public domain software. The meeting is open to all. Meetings at Midcities Bank, 9025 Artesia, Bellflower, CA, 2nd Wednesday of each month; 7 p.m. Contact Melvin Pasley, 4566 Shadeway Rd., Lakewood, CA 90713, (213) 421-3094.

Kaypro UG, 3134 N. Palm Shields, Fresno, CA 93704.

K-West, Orange County Kaypro users group. Meetings 2nd Monday of the month, Glendale Federal Savings, 100 Newport Center Drive, Newport Beach.

Club 16. Meets once a month in Costa Mesa at 2790 Harbor Blvd., (CBS Store) to share knowledge of the 16 bit world. It is a small group so that everyone can get to know each other and share. Large public domain library. Contact Peggy Lloyd, (714) 645-9868 for information.

LA Kaypro Users' Group. Primarily CP/M users, all brands welcome. Meets 3rd Tuesday, 6:30-9:30, Beverly Hills High School, 241 Moreno Ave., 3rd floor cafeteria, near Olympic and Spalding. Contact Allyn Franklin or Barry Cole, (213) 278-3748 or (213) 390-3851 after 11 am please.

Kayos Kaypro Users Group. Kayos Kaypro User Group invites Kaypro and CP/M users to meetings at TRW in Redondo Beach, 6:30 pm, third Monday of the month. (213) 379-8339 for details.

TUG-NET Kaypro and Osborne SIG meets 4th Thursdays, 7 pm, Central Savings, 4464 Van Nuys Blvd., Sherman Oaks. Call (818) 882-1693 for information.

Osborne Komputer Owners Klub (OKOK) is a microcomputer user group serving a variety of computers: Osborne, Kaypro, Commodore C128, IBM and clones. As an affiliate of FOG, we serve both MS-DOS and CP/M operating systems. We offer monthly meetings, classes, public domain software library, electronic bulletin board and special purchase opportunities. Meetings third Wednesday of the month, 7:00–10:00 pm. Meetings held at the Altadena Public Library, 600 E. Mariposa, Altadena, CA. Contact Lionel Soracco, (818) 794-3243, or write OKOK, P.O. Box 40429, Pasadena, CA 91104.

LEADING EDGE

Leading Edge User's Group. A user's group of predominantly Leading Edge users and other similar machines with high clock speed. Public domain software, demos of software/hardware. No fees. Meetings 7:00 pm, 2nd Wednesday of the month, 12792 Valley View, Suite F, Garden Grove, Contact Bruce Fruchter, (714) 891-2001 for information.

OCTIPUG-SIG. Forming Leading Edge user's group. Will organize to teach DOS, Framework, dBASE III, utilities and public domain software. Meeting times and address to be announced. Contact Michael Banyacki, 24992 Spadra Lane, Mission Viego, CA. (714) 770-3172. Leave name and phone number.

LOTUS

Los Angeles Lotus Users Group. Demonstrations, problem-solving, third-party applications, etc. For Lotus 1-2-3 and Symphony. Informal and fun. 7–9 pm, Burbank church of Religious Science, 3rd Thursday each month. Take 134E to Pass, N. 1 block. Call Don Roark, President, (818) 905-1441 for information.

MACINTOSH

Los Angeles Macintosh Group (LAMG) Be a part of the best Mac group in So. Calif. Many SIG and local groups to choose from including desktop publishing, OMNI, business, education and more. Monthly main meeting at McKinley Elementary School, Santa Monica Blvd. at Cloverfield, Santa Monica. Membership $25 annually includes 12 issues of MacDigest newsletter, access to public domain library, discounts at local stores. Call Eric Anderson, (213) 278-LAMG for information.

Ventura County Macintosh Club Mac and Lisa users invited. Membership $21/yr.; newsletter, software library, discussions and ideas. P.O. Box 7754, Oxnard, CA 93031, (805) 983-1610, (805) 499-2824.

Mac Valley Users Group. For $20/yr. membership fee you too can enjoy meetings chock full of software/hardware presentations, public domain software library, Mac articles index, software and accessory raffles, and help hotline. Broad range of users, very friendly to novices. Meetings at Burbank High School Cafeteria, Burbank Blvd. at 3rd St., Burbank, CA, third Tuesday of the month, 7:30 p.m. Contact Ruth Stever, P.O. Box 4297, Burbank, Ca 91503, (818) 848-1277.

MAC-HACers. Macintosh computer club for Hughes Aircraft employees only. Meetings 3rd Wed. each month, H.E.S.E.A. Club House, 1216 Imperial, El Segundo, CA 90745, across from LAX, 5 pm. Contact Bud Grove, (213) 606-2212, 5am-3pm, (213) 549-9664.

Orange Apple Macintosh Group. The Macintosh Meeting of the Orange Apple Computer Club meets 1 pm-4 pm the 1st Saturday of each month in the Science Hall at Orange Coast College, Costa Mesa. We have the best of the public domain software for the Mac, and several fun special interest groups which include Fast Start, Mac Modem, and Deciphering Mac Public Domain. For further info, call (714) 770-1865.

Mac Orange. Monthly newsletter, special intrest groups, monthly meetings, $20 annual dues. Meetings 3rd Wednesday of each month, 7:30 pm, Johnson Center, Santa Ana College, Bristol at 17th. Novices SIG meets at 7:00. For info write Box 1830, Santa Ana, CA 92701, or call (714) 542-9753.

MacBuddhist. Learn about computer assisted dharma study and application to daily living. Network of on-line Bodhisattvas sharing material crossing sectarian lines. Monthly meetings, last Saturday of the month. Contact secretary, College of Buddhist Studies, 933 South New Hampshire, Los Angeles, CA (213) 739-1270.

Corporate User Groups SIG of Los Angeles Macintosh User Group establishes communication between leaders of Macintosh User Groups of companies in the greater Los Angeles area. The main purpose of the group is to share information on Macintosh use in corporations. It also consults company recreation clubs in starting and supporting company Macintosh groups. Contact Charles Shipp, (213) 970-6300w, (213) 833-9186h, for more information.

San Gabriel Valley Mac Users Group. Meets once a month to disseminate information about the Macintosh. Meetings are held on the first Thursday of every month at the City of Hope in Duarte, 7:30 pm in cafeteria complex Room B. The SGVMUG has special interest groups such as Power Users' SIG and a Novice SIG. Public domain library, monthly newsletter. Membership is $20 per year. Contact Frank Chavez on the 24 hour information line (213) MUG-ICON, or write SGVMUG, P.O. Box 792, Sierra Madre, CA 91024.

Macintosh Computer Society. General meeting on the 1st

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Thursday of each month at 23 Civic Center Drive, Northwest corner of Santa Ana Blvd. and Rose Street. Meeting time 7:30 pm. Membership $20.00 per year. FREE help / education meetings on the 2nd and 3rd Tuesday of each month at Progressive Savings 19900 Beach Blvd., Huntington Beach, 7:15 pm. Our huge library contains the best of Public Domain software for all the Mac family. For further info, call Robert at (714) 840-1238 or mail to 17661 Falkirk Lane, Huntington Beach, CA 92649.

Rockwell International Macintosh Users' Group (RIMUG). Meets 1st Tuesday of each month 12 noon at 2770 E. Carson St., Lakewood, CA. Al Nercessian, president. 8511 Beverly Pk. Pl., Pico Rivera, CA 90660. (213) 420-4819.

MORROW

West LA Morrow User's Group /The Morrow Minority. 40 dedicated members, with special emphasis in WP; PD library. No dues, but $1 at door to pay for refreshments. Some classes and informal newsletter. If new, call to reserve space: Dr. Bernice Ennis, (213) 276-9096, 1833 Franklin Canyon Dr., Beverly Hills, CA. Meetings 2nd Wednesday of the month.

LA Morrow User Group. Meets 3rd Thursday each month, North Hollywood Recreation Center, 11430 Chandler Blvd., North Hollywood. Contact Jack Byers, (818) 347-7283 for information.

NEC

Orange County NEC Users Group (OCNUG). Dedicated to NEC-APC computers, CP/M-86 & MS-DOS. Always room for any experience level. Meets 3 pm, third Saturday of the month. 6642 Lenore, Garden Grove. CA 92645. Call John Bingel at (714) 897-7656 for more info.

The Los Angeles Area NEC APC Users Group meets on the first Saturday of each month at 3 pm at the I/O Interface Computer Mart, 6241 West 89th St., Los Angeles, CA 90045. Telephone (213) 410-9824. There is no meeting in January, and occasionally a meeting may be cancelled or postponed, so it is best to call before coming.

OLIVETTI

Olivetti PC User Group forming. Send SASE to Stan Cory, 29500 Heathercliff Rd. #86, Malibu, CA 90265, or call (213) 457-3879.

OMNIS 3

Omnis 3 User Group. Meets every third Wednesday of the month at Grant St. Elementary School in the auditorium. Address is 2368 Pearl St., Santa Monica. Time is 7:30 pm. The use of Omnis3 and Omnis 3+ in data processing information management systems is covered, from setup to advanced features. Expert and novice welcome. Call Zachary Sempers at (818) 701-1355 for information.

OPEN SYSTEMS ACCOUNTING

OSAS User Group. New group being formed for CPA's, consultants, and other business people who use Open Systems Accounting software to promote a better understanding and more efficient use of OSAS software. Subjects covered will include use of DOS, general accounting and the general use of software and hardware, e.g. networks. Call (213) 452-1335 for information.

OSBORNE

TUG-NET Kaypro and Osborne SIG meets 4th Thursdays, 7 pm, Central Savings, 4464 Van Nuys Blvd., Sherman Oaks. BBS (818) 882-6045, 8-N-1, 1200 baud, 24 hours.

Osborne Komputer Owners Klub (OKOK) is a microcomputer user group serving a variety of computers: Osborne, Kaypro, Commodore C128, IBM and clones. As an affiliate of FOG, we serve both MS-DOS and CP/M operating systems. We offer monthly meetings, classes, public domain software library, electronic bulletin board and special purchase opportunities. Meetings third Wednesday of the month, 7:00 - 10:00 pm. Meetings held at the Altadena Public Library, 600 E. Mariposa, Altadena, CA. Contact Lionel Soracco, (818) 794-3243, or write OKOK, P.O. Box 40429, Pasadena, CA 91104.

Osborne National Users Group meets 2nd Fri./mo. at 7:30 pm at Wizard of Oz, 20630 Lassen St., Chatsworth, CA 91311. Contact Art Schlefstein, (818) 709-6969.

PARADOX

Southern California Paradox Users Group. Anyone with an interest in the relational database Paradox please send an SASE to Brian Smith, 350 Palos Verdes Blvd., Redondo Beach, CA 90277. Meetings are being held in LA and Orange County.

RADIO SHACK TRS

South Bay Color Computer Club TRS-80, TDP-100, Dragon. Meets third Friday of the month at Mercury Savings, 22939 Hawthorne Blvd., Torrance. Info: Andrew Corlett, 1435 W. 172nd St., Gardena, CA 90247. (213) 538-8394.

OCTUG-Orange County TRS-80 Users Group. Meets the 3rd Sunday of each month in the community room at "The City Shopping Center" in Orange. The room is near the green entrance of the mall (N.E. corner). MS-DOS SIG (Special Interest Group) begins at 11:30 am. General meeting begins at 1:30 pm. Devoted to the Tandy line of computers and compatibles. Come on down and see what it's like. For more info, contact Franco Collino, (714) 750-0887.

San Gabriel Valley TRS-80 Users Group. Supporting users of TRS-80 and Tandy computers. Meets 2nd Friday of each month at Arcadia Park Senior Citizens Center at 7:30 p.m. Monthly newsletter, various SIGs, lotsa fun & info. Contact Dan Dresselhaus. (818) 914-5831 days.

VTUG (Valley TRS-80 User Group). Devoted to users of TRS-80 Model I, II, 4, 4P, LNN or MAX-80. Speakers, presentations, raffle drawing, refreshments. No admission or membership fee, new members welcome. Meetings at Glendale Federal Savings, 7129 Topanga Canyon Blvd., Canoga Park, 3rd Thurs., 7:30 pm. Contact Fred Blechman, (818) 346-7024.

VTHGValley TRS80 Hacker's Group. Programming and problem solving for Models 1, 3, and 4. No vendors, no machines. No dues. No sweat. Bring a blank disk and get NEW public domain software. Meetings 1st Fridays, 7:30 pm, Valley Plaza Park Auditorium, 12240 Archwood St., North Hollywood. Call Eric Bagai at (818) 982-0467 for more information.

Tandy 1000 (The MUG) Meets fourth Wednesdays, 7 pm, 9027 E. Artesia, Bellflower, CA. Contact Dick Sherwood, 4014 Centralia St., Lakewood, 90712, (213) 421-4014. The MUG RBBS (213) 425-0022, members only.

Color America. Radio Shack color Computer SIG meets 2:30-5 pm on the third Saturday of the month at Rosemead Community Center, 3936 N. Muscatel Ave., Rosemead. Contact Mark Randall, 2227 Canyon Rd., Arcadia, CA 91006, (818) 355-6111.

The Los Angeles-Wilshire Color Computer Users' Group, a TRS-80 Color Computer Users' Group, meets the 2nd Saturday of each month, 12:30 pm-5:30 pm in the Felipe de Neve library's community room, 2820 W. 6th, Los Angeles. Call Milton, (213) 558-4909.

United Computer Federation-San Fernando Valley Chapter. Meets the fourth Tuesday of each month at the Tarzana Radio Shack, 18545 Ventura Blvd., 1/2 block west of Reseda Blvd. Meeting starts at 7:30 pm. Meetings are open to the public and all are welcome. The UCF is a network of Tandy Color Computer user groups. For more information phone Pete Ellison, chapter president, at (818) 840-8902.

United Computer Federation-Los Angeles Chapter. Meets the fourth Thursday of each month at the Church of Christ recreational building, corner of Clark and Park streets, just off the 91 freeway in Bellflower. Meeting starts at 7:30 pm. Meetings are open to the public and all are welcome. The UCF is a network of Tandy Color Computer user groups. For more information phone Gary James, chapter president, at (213) 420-7632.

United Computer Federation-Orange County Chapter. Meets the second Sunday of each month at the Mercury Savings building on Edinger Ave., 1 block north of Beach Blvd. in Westminster. Meeting starts at 1:30 pm. Meetings are open to the public and all are welcome. The UCF is a network of Tandy Color Computer user groups. For more information phone Allen Nedrow, chapter president, at (213) 692-3073.

SBT

The Orange County SBT Users Group is being formed and is seeking members who are interested in an atmosphere that promotes the better understanding and more efficient use of the SBT Accounting Software. Contact Jay Rubin, P.O. Box 5145, Newport Beach, CA 92662, (714) 720-8171.

SANYO

Sanyo-MS/DOS Table Top Computers, 14717 South Prairie Ave., Lawndale, CA 90260. (213) 679-1151.

Zenith-Sanyo Users Group meets 10 am every first and third Sunday at 401 S. La Brea Ave., Inglewood, CA 90301. Call Alan Gillen, (213) 674-0318 for information.

Sanyo Users Group of LA (SUGLA). Devoted to users of Sanyo MBC 550/555 micro business computer. Guests welcome. Dues $15/yr. Speakers, presentations, public domain software library, information, new hardware and software reviews. Meetings 2nd Wednesdays, 7 pm, CAL State University, LA, Student Union (Bldg. #5), 4th floor in South Pasadena Room. Contact Fred Blechman, (818) 346-7024.

TEXAS INSTRUMENTS

LA 99er Computer Group. TI 99/4A support, classes and SIGs, large software library, monthly newsletter. Demonstrations, bulk purchase discounts on hardware, software and books. A good group to join. Meetings at Torrance Public Library, 3301 Torrance Blvd. (corner of Madrone), Torrance, CA. 4th Wednesday of the month, 7 pm. Contact Terrie Masters, 148 S. Maple Drive, Beverly Hills, CA 90212, (213) 271-6930.

The TI-99 Club. Yes, there still are a lot of 99's and 99/4a's around. If you own one, then get in touch with these people. They have good info for TI owners. Meetings take place at the Westminster Community Center on the third Thursday of every month at 7:00 pm. For info, call (714) 842-0859.

TI-West (Los Angeles West Side Area). Meets at DeCoursey Engineering Laboratory, 11828 W. Jefferson Blvd., Culver City, on the 3rd Monday of each month. For information, contact Lew Howard at (213)397-9668.

San Gabriel Valley TI 99/4 Users Group meets 1st Wed./mo. at 6:30 pm in the Covina Parkway, West Covina, CA. Contact Tom Padilla, (213) 330-8240.

TI Riverside UG. Supporting the TI 99/4A. Meetings at Collett School, 3rd Thursday, 7 p.m. Contact Ed Butcher, 3523 McKinley St., Riverside, (714) 686-0336.

San Fernando Valley TI 99/4A User Group. Library, Workshops, Newsletter, How To? For further information call Jim Edwards, (818) 248-9558, 5-10 pm. Meetings 2nd Wednesday of the month, 7:30 pm, Doctor's Conference Room, Sherman Oaks Community Hospital, 4929 Van Nuys Blvd.

Antelope Valley TI UG. TI User Group. Meetings at Palmdale Culture Center, 3rd Wed., 7 pm. Contact Len Rouw, 38540 26th St. East, (805) 947-6270.

El Toro 99 Hom Computer Users Group. The ET-99 Home Computer User Group meets to demonstrate programs, equipment, and discuss techniques. Contact Ken Baldwin, 23065 Sonoita, Mission Viejo, CA 92641, (714) 855-0480. Meetings at Mercury Savings and Loan, 1-5 and Lake Forest, El Toro, 2nd Saturday of each month 9 am - 12 noon.

Tri-Valley 99'ers. We have what you're looking for! Interesting guest speakers, software/hardware demonstrations, large group library, monthly newsletters. We serve the entire Conejo Valley and beyond! Contact Steve Mehr (805) 496-8725 or Chuck Salvatore, (805) 527-4129 for more information.

BUG (Brea 99er's Users Group). Meets the first Monday of the month at 7:30 pm at the Western Federal Savings meeting room, #10 La Habra Fashion Square, corner Beach and Imperial, in La Habra. For further information call Bob August at (714) 871-3405.

San Fernando Valley Texas Instruments Professional Computer User Group (SFV TI-PRO USER GROUP). Meets at 9017 Reseda Blvd. Suite #212, Northridge, on the 3rd Sunday of each month at 10:00 am. We serve the entire San Fernando and Santa Clara Valleys. Group meets to discuss: how-to techniques, programs, equipment and software. All are welcome —bring a friend. TI-Pro/AutoCAD Users are also welcome. For more info, contact Marcus Swed at (818) 993-3151 during the day and at (818) 366-0886 evenings.

The Pomona Valley 99ers Computer Users Group. Meets locally every month on the second Monday of the month. Anyone interested in home computing is welcome to come to our meetings at 7:00 pm. We meet at the Cortez Elementary School at 12750 Carissa Ave., Chino, which is south of the Pomona Freeway and west of Mountain Ave. There are demos of hardware and software. Mostly for the Texas Instruments 99/4A computer. Lots of discussion. We try to educate and stimulate interest in computer literacy and programming. If you become a member of this non-profit group you'll get a monthly newsletter and be able to get copies of the programs in the large club library of public domain software.

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Orange County Victor 9000 User Group. Meets second Friday of the month at 7:30 pm, Cal State Long Beach, Palo Verde St., Engineering Bldg. #2, Room 304, Long Beach. For information write or call Don Henderson, 9350 Bolsa Ave. #8, Westminster, CA 92683, (714) 894-0073.

WANG

Wang WP Users Group. Meets 4th Thurs. of each odd month, 6 pm. Newsletter, speakers,information network. Call for meeting place: Steven Hirsh, (213) 255-5515, or write 2858 El Roble Drive., Los Angeles 90041.

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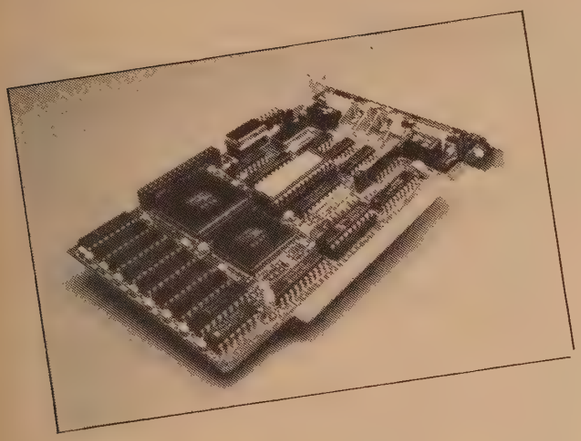

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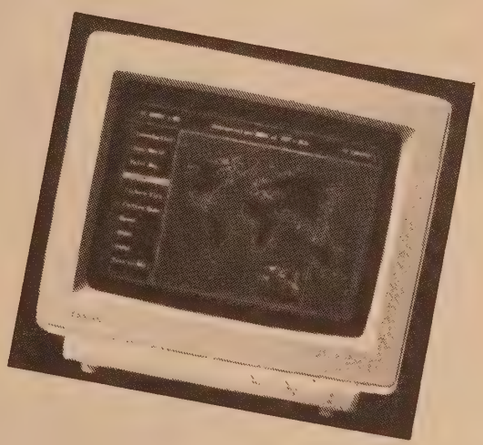

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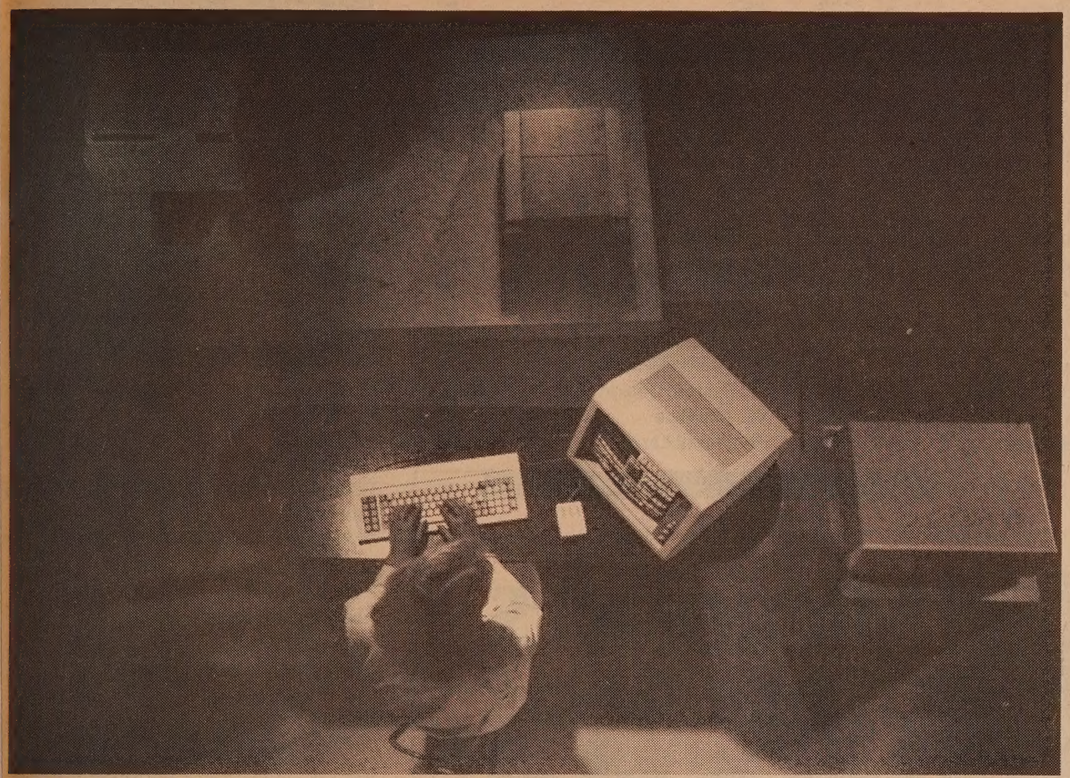

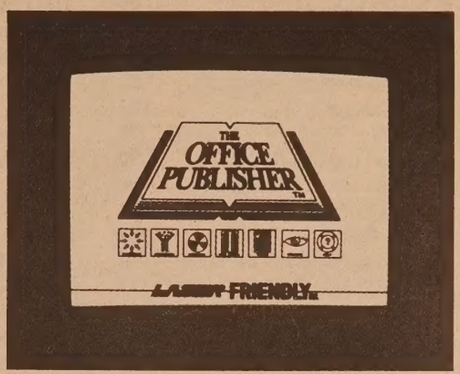

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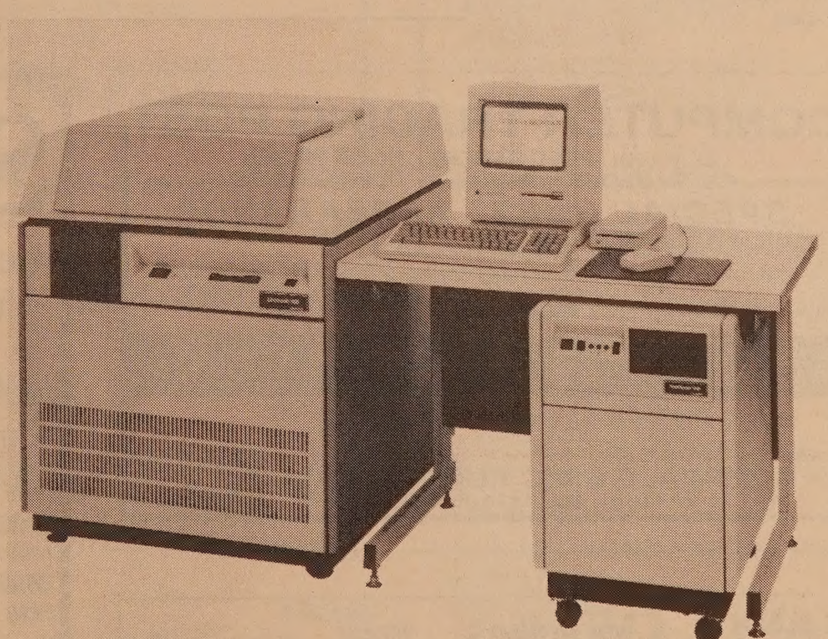

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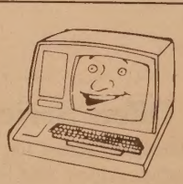

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What a system! Anchored by the sleek, new AST Premium/286 (6-8 10 Mhz with 0 wait states, 512K, 1.2 Mb floppy, clock/calendar, MS-DOS 3.2) Supercharged with a Seagate 30 Mb. Warp Hard Disk. And displayed on the super hi-res 19" Laserview monitor by Sigma Designs with 1664 x 1200 pixel resolution and true WYSIWYG.

Wait, there's more! We've included a state-of-the-art flat-top scanner by Datacopy. This scanner not only digitizes pictures and documents, it can scan material out of books and periodicals! And a great deal on the brand new Hewlett-Peckard Laser Series II, with 8 page-per-minute, correct-order output; a smaller footprint; full-page 300 dpi graphics; and optional plug-in memory cartridges.

Plus PageMaker, Microsoft Windows, Microsoft Mouse, and the premier word-processing package for quality desktop publishing, Microsoft Word. Whew!

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Need to connect your business operations with power, versatility and ease of use? The Alpha Omega Network/Accounting System has it all. "I stand behind this network package all the way," says our president, Steve Kessedjian. "We use it every day, and it's the easiest and most reliable network and accounting package ever. You can put it to work right out of the box."

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For stations, we have chosen the versatile PC II XT-compatible computers running at 4.77-8-10 Mhz (also available separately — a great buy!). The PCII comes with 256K expandable to 640K and one floppy disk drive. All three computers come with MS-DOS 3.2, Hercules-compatible mono graphics card and 12" monitor.

Next, we add Novell's 286 G Net. Novell invented the file server and continues to be the undisputed industry leader with more than 4,000 users world wide.

Finally, there's the incredible network accounting package by Computer Associates, EasyPlus Network Manager. We start you off with G/L and A/R, but we're pretty certain you're going to want to add their other modules too, including A/P, order entry, inventory and payroll.

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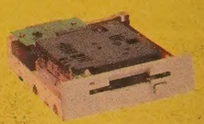

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